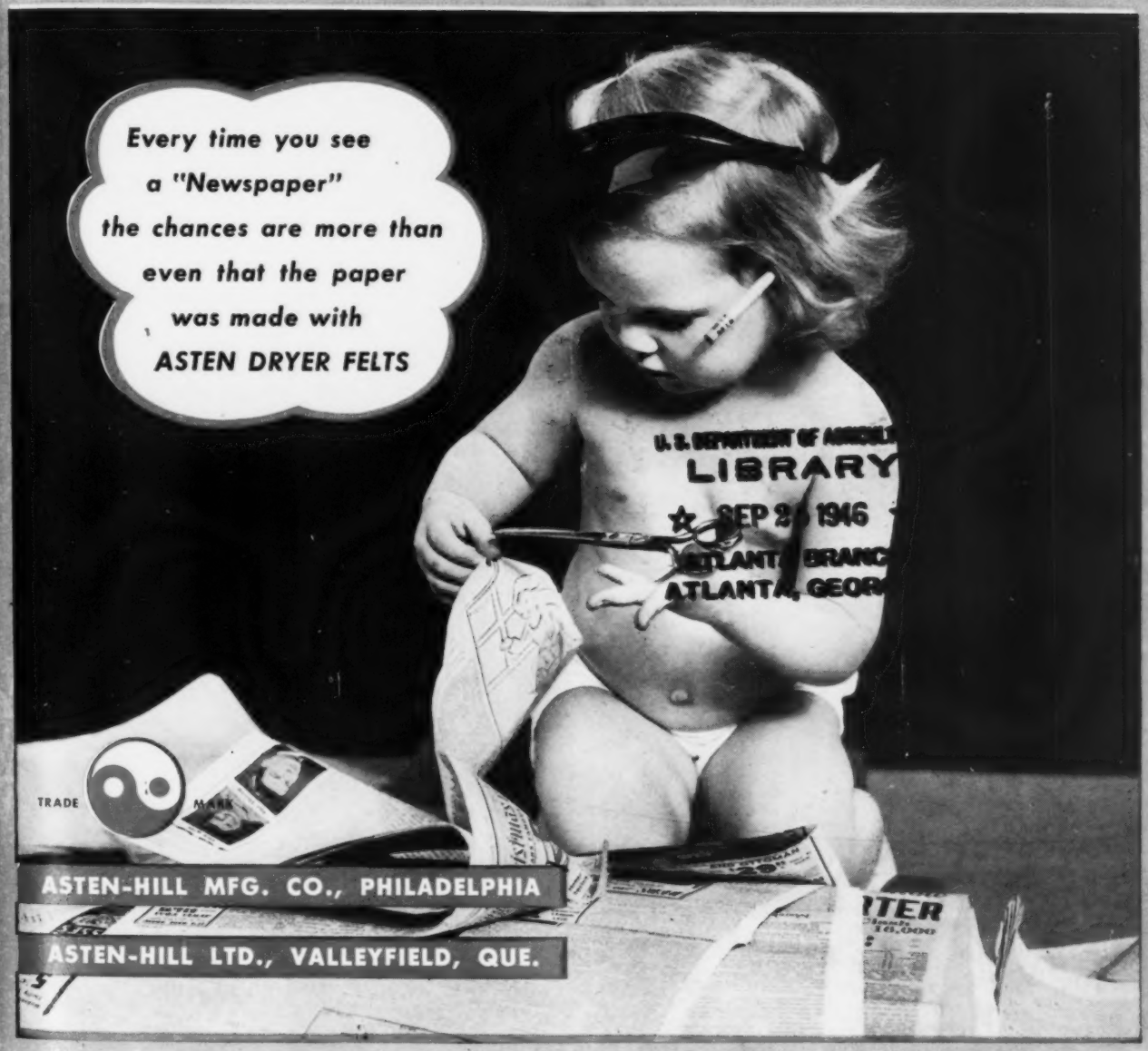
302.8
P196
COP.2

PAPER TRADE JOURNAL

VOL. 123, NO. 12 SEPTEMBER 19, 1946


Every time you see a "Newspaper" the chances are more than even that the paper was made with ASTEN DRYER FELTS
U.S. DEPARTMENT OF AGRICULTURE
LIBRARY
SEP 26 1946
ATLANTA, GEORGIA
TRADE MARK
ASTEN-HILL MFG. CO., PHILADELPHIA
ASTEN-HILL LTD., VALLEYFIELD, QUE.

Giegengack May Recommend Government Build Mills
August Hit New High in Newsprint Production
Benjamin Gertner Buys the Hoornbeek Mill
Congress Opens Fourth-Quarter Bids

Rep. Roberts Asks OPA to Revise Pricing Formula
Chemists Forecast Better Paper, Less Waste
Hoosier Waste Goes to Wallboard Mills
Bird and Son Advances Executives

Over 200 Suction Felt Rolls

Used on Paper and Board Machines

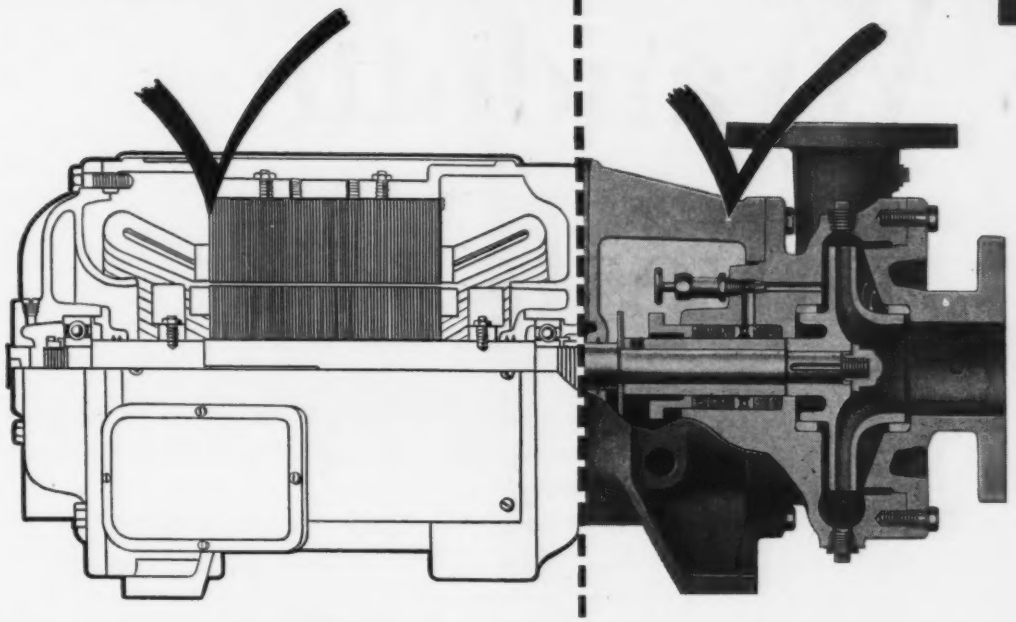
Installations of Downingtown Suction Felt Rolls at various positions on Fourdrinier and Cylinder Machines show 20% to 100% increase in felt life, depending on the condition of the machine parts and the class of stock being handled. These rolls continuously keep the full width of the felt clean and open at all times. Photo below shows an installation on a fourdrinier making book.

DOWNINGTOWN MFG. CO.
DOWNINGTOWN, PA.

New Catalog. Write For It Today

DOWNINGTOWN
Designers & Builders
Paper Making Machinery

Motor *and* Pump



...combined

TO GIVE UNDIVIDED RESPONSIBILITY FOR CAPACITY... EFFICIENCY... HEAD

NOT ONE maker's pump hooked up to another maker's motor —but pump AND motor, designed and built as a unit by Allis-Chalmers.

There's no buck-passing. Allis-Chalmers backs every "Electrifugal" pump all the way — tests and checks the performance of each unit, at the factory.

FOR EVERY PUMPING NEED . . . CALL ON A-C

This versatile, popular "Electrifugal" pump is only part of the complete Allis-Chalmers line of centrifugal, axial and mixed-flow pumps — single or double suction, single or multi-stage, capacities up to 170,000 gpm. Call your A-C office or dealer — or write for bulletin B6018. ALLIS-CHALMERS, MILWAUKEE.

A2073

SPLASH-PROOF, LO-MAINTENANCE MOTOR — specially built for pump service. Sturdy, long-life rotor, interchangeable stator coils.

PUMP AND MOTOR IN ONE RUGGED FRAME, and on the same shaft. Result: perfect alignment; smooth, vibrationless operation; longer bearing life.

EASY INSTALLATION AND MAINTENANCE. Just hook up and pump... operates in almost any position ...all parts easily accessible for checking and service.

SIZES FROM ¾ TO 25 HP meeting a wide range of requirements as to capacity, head, and fluids to be pumped.

ALLIS-CHALMERS

★ One of the Big 3 in Electric Power Equipment
Biggest of All in Range of Industrial Products ★

Electrifugal PUMPS

Wyandotte invests

Twenty-five million dollars. . . . in an expansion program designed to help meet ever-increasing demands for industrial chemicals.

It is an investment founded upon faith—faith in the American system of free enterprise and in the continued greatness of this nation.

This program, already begun, is scheduled to be completed within eighteen months. It will greatly increase Wyandotte's capacity to produce calcium carbonate, chlorine and soda ash. Improvements in the method of processing caustic soda will also increase production of this vital material.

Included in the plans are new plants for the manufacture of glycol and synthetic detergents. The erection of the glycol and synthetic detergent plants will mark a major move by Wyandotte into the field of organic chemicals.

In addition to the huge construction project, Wyandotte is enlarging its sales force, its research, technical and engineering staffs—the better to meet customer needs.

Wyandotte will continue—as it has throughout the period of shortages—to allocate its production fairly to its regular customers at all times. Meanwhile, Wyandotte looks forward to the day when all requirements can be met promptly and entirely.

OFFICES IN PRINCIPAL CITIES

WYANDOTTE CHEMICALS CORPORATION • MICHIGAN ALKALI DIVISION • WYANDOTTE, MICHIGAN

Soda Ash • Caustic Soda • Bicarbonate of Soda • Calcium Carbonate • Calcium Chloride • Chlorine
Hydrogen • Sodium Zincates • Aromatic Intermediates • Dry Ice • Other Organic and Inorganic Chemicals

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.
Established 1872

Volume 123 Number 12

Published Every Thursday by Lockwood Trade Journal Co., Inc.

Executive and Editorial Offices:
15 W. 47th St., New York 19, New York

GEO. E. LOCKWOOD, *President & Treasurer*
ARTHUR E. GORDON, *Vice-President*
JOSEPH P. HORGAN, *Secretary*
W. L. COOK, *Editor*
HARRY I. JENSEN, *Assistant Editor*
R. G. MACDONALD, *"TAPPI" Editor*
F. B. GROSSE, *Make-Up Editor*

Eastern Representatives
BRUCE E. BROWN, *15 W. 47 St., New York 19, N. Y.*
EDWARD H. DOERING, *15 W. 47th St., New York 19, N. Y.*

Mid-Western Representatives
H. K. VINTON, *123 W. Madison St., Chicago 2, Ill.*
A. F. MACDONALD, JR., *Cleveland, Ohio.*

Pacific Coast Representatives
ROY M. MCDONALD & CO.,
San Francisco, 4, Cal., 564 Market St.
Los Angeles, 6, Cal., 1323 Venice Blvd.
Seattle, 1, Wash., 1411 Fourth Ave.

Representative for Denmark, Norway, Sweden and Finland
OXFORD TRADING AKTIEBOLAGET, *Biblioteksgatan 6-8, Stockholm, Sweden.*

Subscriptions: (Payable in advance) By the year $4.00; Single Copy 10 cents.
Postage Extra: To Canada $2.00; To Other Foreign Countries $3.50.
Member Audit Bureau of Circulations.

PAPER *established Feb. 17, 1899, combined with* PAPER TRADE JOURNAL *Nov. 16, 1899.* PAPER *established Sept. 21, 1910, combined with* PAPER TRADE JOURNAL *Feb. 19, 1926.*

All rights to the above titles reserved.

PAPER TRADE JOURNAL *is entered as Second Class matter at the Post Office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office at Lockwood Trade Journal Co., Inc., 34 N. Crystal St., East Stroudsburg, Pa. Printed in U. S. A.* *Copyright 1946 by the Lockwood Trade Journal Company, Inc. The contents of* PAPER TRADE JOURNAL *including all articles, illustrations, etc., are covered by copyright and may not be reprinted except by permission.*

CONTENTS

SEPTEMBER 19, 1946

Earnings Moderate Tinker Declares	11
Giegengack to Recommend That Government Build Own Mills	11
Congress Opens Bids for Fourth Quarter	12
Toilet Tissue and Toweling Raised 5%	12
Newsprint Inventories at 37 Days Supply	12
OPA Raises Price on Facial Tissue	14
Lining Converters Get Higher Ceiling	14
Bird & Son Advances Executives	16
Ready Memphis Mill for Kleenex Output	21
Chemists Forecast Better Paper	22
Seek De-Control of Casein Prices	24
Obituary	28

Financial News	18	Production Report	33
Market Review	58	Miscellaneous Markets	50
Imports	47	Market Quotations	40
Editorial	32	Classified Advertising	54

Technical Section *("TAPPI")*

TAPPI and the Strawboard Industry	35
New England TAPPI Executive Committee Meets	37
TAPPI Notes	37
New Hampshire TAPPI to Meet Nov. 8-9	37
The Production of Wood Sugar in Germany and Its Conversion to Yeast and Alcohol	38

PAPER TRADE JOURNAL IS INDEXED IN INDUSTRIAL ARTS INDEX

INDEX TO ADVERTISERS ON PAGE 68

SPRACO NOZZLES

Write for NOZZLE CATALOG

MANUFACTURED BY SPRAY ENGINEERING CO.
118 CENTRAL STREET, SOMERVILLE 45, MASS.

WOODPULP AGENTS
PAPER EXPORTERS

ELOF HANSSON, INC.

NEW YORK

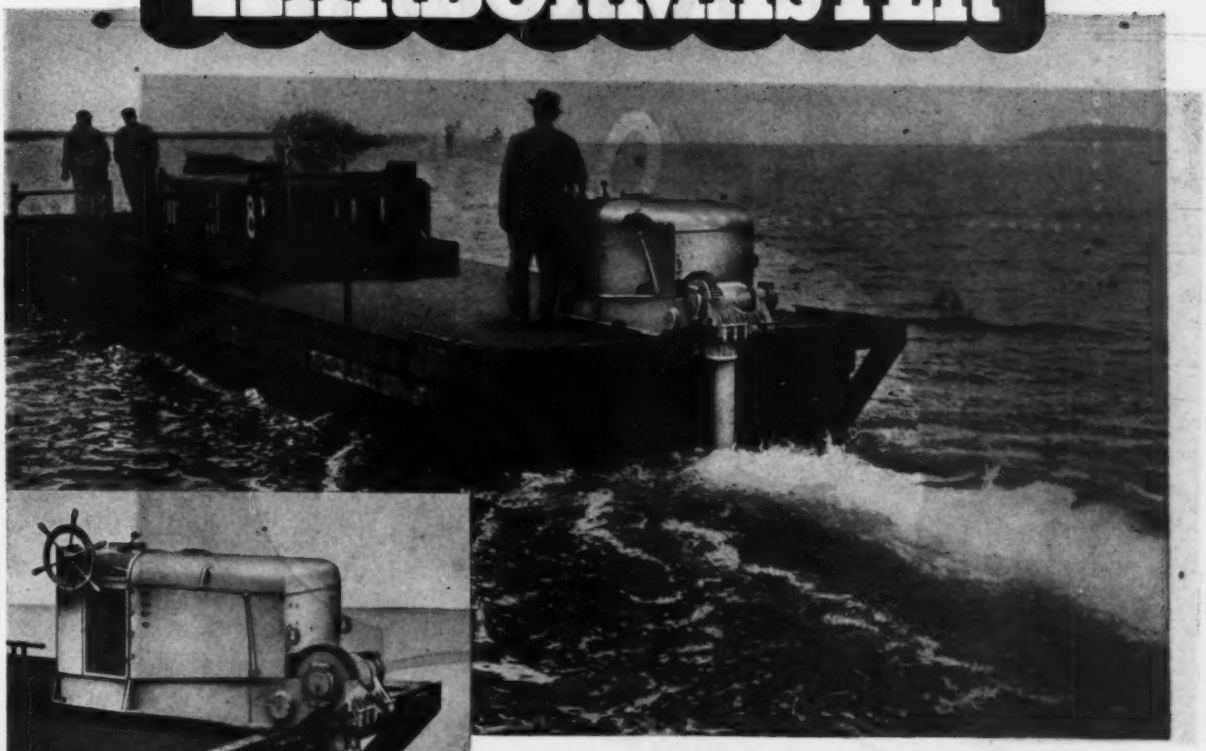
220 EAST 42ND STREET

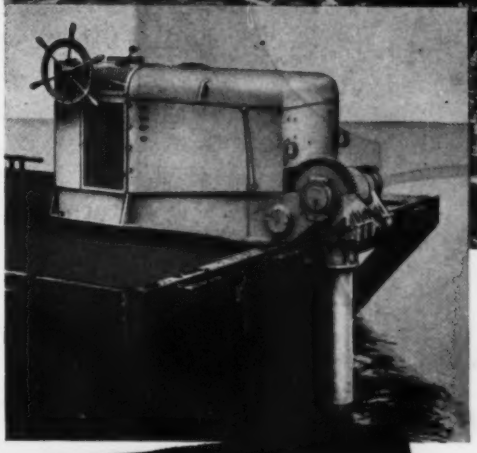
OFFICES:
Gothenburg, London, Sao Paulo,
Buenos Aires, Rio de Janeiro

NEW MODEL 0-41

MURRAY & TREGURTHA'S

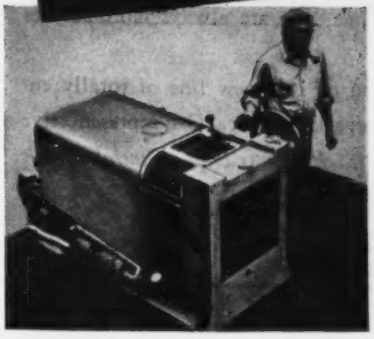
HARBORMASTER





40 H. P. (guaranteed continuous heavy-duty rating)
GAS OR DIESEL

- 360° Propeller Thrust Steering Control (flanking, reverse, any direction with 100% power)
- 180° Elevating Mechanism (Service and repair on the spot)
- Automatic Shear Pin (Time and money saver for all operators)
- Unequalled ease of operation and maintenance.



MOST EFFICIENT, *Powerful, Economical Propelling and Steering Equipment in its field*

We are proud to announce (on the successful completion of all the thorough M & T tests carried out under actual working conditions) our latest "Harbormaster" design, Model 0-41. Compact and powerful, the "Harbormaster" Model 0-41, gas or diesel, has all the features and abilities of accepted earlier "Harbormaster" models which today are leaders all over the world in economical operation and maintenance efficiency, *plus* delivering *more thrust per horsepower* than any other conventional propelling and steering equipment. Easily adaptable to many types of marine craft, the rugged portable Model 0-41 will do your marine work better. Write or wire today for full details and prompt delivery of our powerful "little giant", the Model 0-41, which is now a proved member of the "Harbormaster" production line, ranging in models from 20 H. P. to 330 H. P. Remember, to the marine world the name "Harbormaster" means *guaranteed top performance at all times.*

- *All "Harbormasters" are completely equipped units — ready for instant use on arrival.*

MURRAY & TREGURTHA, INC.

High Fidelity Marine Engines since 1885

2 HANCOCK STREET, QUINCY 71, MASS., U. S. A.

MATHEWSON MACHINE WORKS, INC. — Manufacturing Affiliate

SHERBROOKE MACHINERIES, LTD., SHERBROOKE, QUEBEC — Licensed Mfr. and Distributor for Canada

Protects itself

New TOTALLY ENCLOSED FAN-COOLED TRI-CLAD MOTOR

1 TO 1000 H.P.

This improved, totally enclosed, fan-cooled motor has everything you want in a motor for wet and dirty locations—exposed to chips, stock, steam, acid or alkaline liquor, or weather. Windings, bearings, and rotating parts are well protected against exposure to such harmful materials. It combines the *extra protection* of the Tri-Clad* open motor with a *double-wall* construction of corrosion-resisting cast iron.

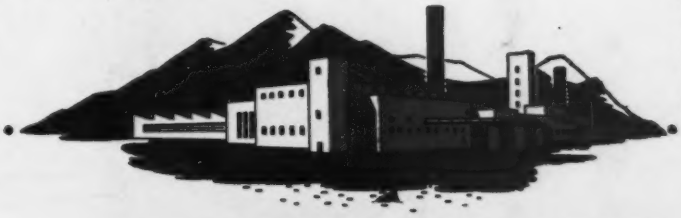
Reckoned strictly in terms of *motor cost per year*, its longer life and lower maintenance make it a low-cost motor for any job where dirt and wetness are encountered. At the same time, you are always more sure of faithful performance.

For full information on this new line of totally enclosed Tri-Clad motors, ask your local G-E representative for Bulletin GEA-4400. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

*Trademark reg. U.S. Pat. Off.

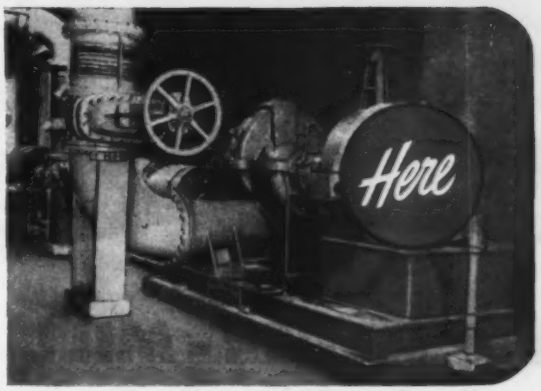
FROM DIRT AND WET

IN THE PAPER MILL AND AROUND IT

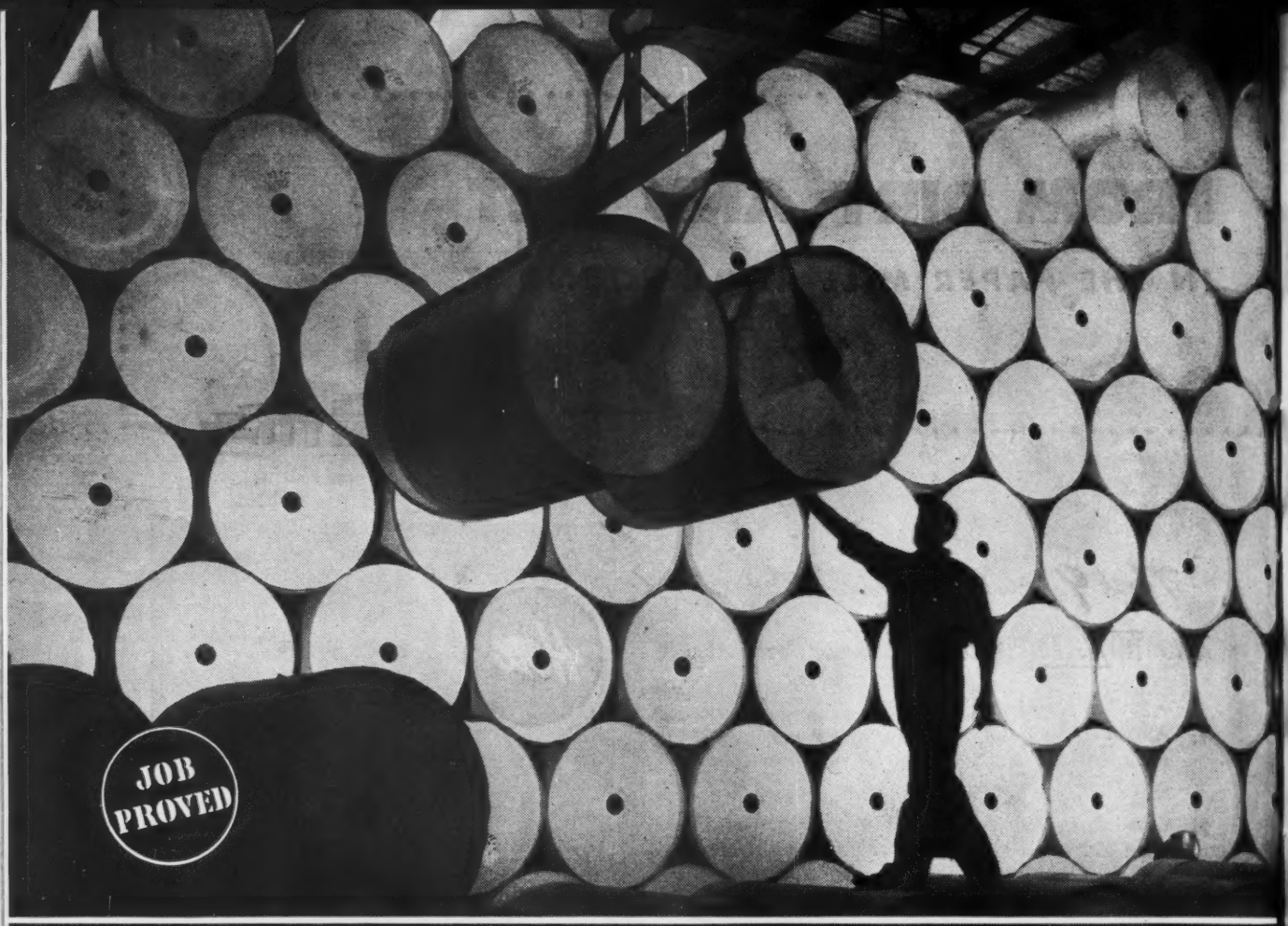


These 9 points of self-protection put this TRI-CLAD TEFC *motor ahead of its class*

1. A cast-iron, double-wall frame that completely encloses windings and protects punchings from corrosion.
2. Cast-iron end shields, ribbed for rapid radiation, machined to give a tight seal, yet easily removable.
3. A well-proved, pressure-relief greasing system which makes correct lubrication well-nigh automatic.
4. The cast-iron conduit box is diagonally split for wiring convenience. (Box is independently explosion-proof on explosion-proof motors.)
5. Leads are sealed in a non-shrinking compound where they emerge from frame.
6. Rotating, labyrinth-seal at bearing journal prevents infiltration of grit or liquids.
7. Large, free-flowing air passages that won't gather dust or plug up.
8. Latest insulation treatment over tough Formex* magnet wire.
9. Powerful yet quiet fan is removable, simplifying maintenance. (Non-sparking type fan for explosion-proof motors.)



GENERAL ELECTRIC



Rolling-up GREATER PROFITS

SUN PAPER-MILL LUBRICANTS . . .

Mean Faster Production, More Continuous Operation, Less Time Out for Maintenance

From power house to loading docks, "Job-Proved" Sun paper-mill lubricants help deliver longer life for your machines, and uninterrupted production; end excessive and unexpected maintenance costs.

Run down the list of your machinery and pick out the trouble spots . . . paper machines . . . calendering machines . . . conveyors . . . compressors . . . Diesels . . . turbines . . . machine tools.

Sun oils and greases have proved their ability on these jobs in hundreds of mills. "Excessive sludge formation stopped" . . . "36% saved on lubrication costs" . . . "Minimum of bearing trouble" . . . "Oil temperatures reduced 15° to 20°F." . . . "Sun grease much cleaner and easier to use, lasts longer" . . . "Wouldn't consider any other lubricant, regardless of price."

This is the kind of thing that experienced paper men in many parts of the country say about "Job-Proved" Sun lubricants. Call the Sun man near you today.

SUN OIL COMPANY • ***Philadelphia 3, Pa.***

Sponsors of the Sunoco News-Voice of the Air—Lowell Thomas

SUN

SUNOCO

INDUSTRIAL PRODUCTS

PAPER TRADE JOURNAL
Vol. 123, No. 12 September 19, 1946
Title Reg. U. S. Pat. Off.

Giegengack to Recommend That Government Build Own Mills

PHILADELPHIA—In an interview at Atlantic City, N. J., last week Augustus E. Giegengack, Public Printer of the United States, declared that he would probably recommend in the next session of Congress a bill which would authorize the Government Printing Office to erect pulp and paper mills for the manufacture of the printing paper required by the Government. Mr. Geigengack, who was in Atlantic City to address the sixtieth annual convention of the Printing Industry of America, at the Thursday session, said the step was necessary due to the increasing difficulty his office is having in obtaining sufficient paper from private sources.

"The amount of paper offered by the paper industry in response to our bids during the last two years," said Mr. Geigengack, "has amounted to only fifty percent of our estimated needs. It has been only by using every resource available to our office that we have been able to persuade mills to sell the Government the paper needed to carry out its various programs."

He declared that one of the reasons the Government is having trouble getting paper is that at least 32 mills having daily capacities of nearly 4,000 tons have been bought by individual purchasers and commercial printers for the exclusive use of their new owners.

Adding that, although the paper industry did a wonderful job for the Government Printing Office during the war, when they correctly considered it their patriotic duty to furnish paper to the Government, they now seem to be under the erroneous opinion that the Governmen does not need a large quantity of paper.

To prove that the Government needs more paper than before the war, the public printer released the following facts:

"To print the 30,475,000 applications forms for G.I. Terminal Leave, 446,000 pounds of paper was required. The Federal Register this year will receive approximately 2,117,000 pounds of paper. Various income tax forms will require 5,620,000 pounds, or 140 carloads.

"The hearing before the Congressional committee investigating the attack on Pearl Harbor required 500,000 pounds of paper, as the hearings were printed in 39 volumes. The report of the Supreme Commander on the combined chiefs of staff on the operations in Europe of the Allied expeditionary force June 6, 1944 to May 8, 1945, required 110,000 pounds of paper to publish the 83,000 copies."

Under his proposed recommendations, Mr. Geigengack said the Government could make use of the forests, minerals, water power and other resources of the public lands for the job.

Hoosier Waste Collection Goes To Wallboard Factories

INDIANAPOLIS — Waste paper which is being collected here this week will be shipped directly to mills specializing in the manufacture of wallboard for use in veterans' housing, officials of the Marion County Salvage Committee declared this week.

Principal objective of the collection drive will be to supply paper for manufacture of wallboard, lack of which has delayed completion of several housing units now under construction.

Wisconsin River Storage At 65 Per Cent Capacity

WAUSAU, Wis. — Six hundred seventy-one million cubic feet of water were drawn from the Wisconsin river reservoir system during the week ended Sunday, September 8, to maintain the river flow for hydro-electric power purposes. On September 8 the system was down to 65.24 percent of its capacity. Total storage on that day was 11,103,000,000 cubic feet as compared to 14,302,000,000 cubic feet on the same day in 1945.

Volney Ordered to Cease Policy

FULTON, N. Y.—The Volney Felt Mills were notified this week by the National Labor Relations Board to stop discouraging membership in the International Brotherhood of Papermakers or any other organization, and ordered reinstatement of certain employes. The company was also ordered to cease refusing to bargain collectively with the labor organization.

Earnings Moderate Tinker Declares

NEW YORK—E. W. Tinker, executive secretary of the American Paper and Pulp Association this week reviewed statistical figures recently circulated among Canadian financial circles, and in the interests of clarity pointed out that some of the figures used in that study were misleading. In the interests of clarity he points out that the Association's own studies of paper industry earnings, while they present a record of healthy growth, contradict any impression that earnings have swelled unusually in the reports of companies whose operations are on this side of the line.

According to the association's statistical study earnings on net worth for 1945 were 5.85 percent. Canadian earnings, according to the Financial Post of Toronto, were 5.5 percent. So far, Mr. Tinker points out, there is no great amount of advantage to U. S. mills. According to the same Canadian source net income for 18 U. S. companies is running in 1946 at 13.8 percent. Against this he places the record as compiled by the Association from approximately 265 paper mills and 140 pulp mills, comprising more than fifty percent of U. S. paper and paperboard capacity.

The paper industry's net earnings after taxes have been moderate but steady over the past 12 years, it is shown in this survey. The most profitable of these years was 1941 with average net earnings of 8.01 percent of sales, 10.18 percent of net worth and 7.24 percent of total assets. Since 1941 net earnings have steadily declined until in 1945 they were 4.31 percent of sales, 5.85 percent of net worth or 4.18 percent of total assets. The industry has operated at a profit in every year except the two depressed years of 1934 and 1935. In each of these years the average net loss was less than ½ of 1 percent of net worth.

Net earnings for 1946 at a higher level than during the war years are indicated by first quarter figures as reported to the Association. Earnings before taxes are about level with 1945 but the tax reserves set up are slightly less, and the net profit is, therefore, slightly higher.

U. S. paper and paperboard consumption in 1946 as tabulated for July was 45.7 percent above prewar and U. S. production was 54.7 percent above prewar average.

August Hit Top In Newsprint Output

NEW YORK—Production of newsprint in Canada during August 1946 amounted to 370,676 tons and shipments to 356,572 tons. Production in the United States was 65,129 tons and shipments were 67,206 tons. The output in Newfoundland was 32,431 tons and shipments were 37,237 tons making a total North American production of 468,236 tons and shipments of 461,015 tons. Total production in August a year ago was 370,945 tons and shipments were 395,378 tons. North American production in August this year exceeded that of any preceding August, and also was greater than that of any month on record.

Canadian mills produced 628,457 tons more in the first eight months of 1946 than in the first eight months of 1945, which was an increase of 29.9 percent. The output in the United States was 34,496 tons or 7.2 percent more than in the first eight months of 1945; in Newfoundland production was 25,755 tons or 11.8 percent more, making a total increase of 688,708 tons, or 24.6 percent more than in the first eight months of 1945, and also was higher than in any preceding similar period.

Stocks of newsprint paper at the end of August were 129,701 tons at Canadian mills, 6,832 tons at United States mills, and 69,978 tons at Newfoundland mills, making a combined total of 206,511 tons compared with 199,290 tons on July 31, 1946, and 121,204 tons at the end of August 1945.

Hoornbeek Mill Is Sold To Benjamin Gertner

NAPANOCH, N. Y.—The former John C. Hornbeek's Sons paper mill has been sold to the well-known paper stock dealer, Ben Gertner, president of the Banner Products Co., 1400 Washington Ave., Bronx, N. Y., through the Gibbs-Brower Company, paper and pulp mill brokers.

Mr. Gertner is making extensive alterations to the buildings and equipment and expects to start operation in the near future producing nine point specialities, imitation and wrapping bogus and similar cylinder machine papers. The new name of the mill will be the Napanoch Paper Mills, Inc. The officers are: Benjamin Gertner, president and treasurer; William Fineberg, vice-president; William Liedstein, secretary; and the old-time paper mill superintendent will be Pat Moran.

Toilet Tissue and Toweling Are Raised Five Per Cent

WASHINGTON — Manufacturers have been given an increase of five percent in their ceilings for toilet tissue and paper toweling sold to converters in jumbo rolls, by the Office of Price Administration. The increase, effective September 19, was granted to stimulate the production of these products and check a tendency to divert production to more profitable lines. No increase is provided today in ceilings for sales other than in jumbo rolls, as an increase was recently granted in ceilings for other sales.

Converters who buy the toilet tissue and paper toweling in jumbo rolls and resell them in smaller packages will absorb today's increases, OPA said. Converters were recenlty given a price increase.

Newsprint Inventories At 37 Days Supply

NEW YORK—Daily newspapers report to the American Newspaper Publishers Association that stocks of newsprint paper on hand were 37 days supply at the end of August 1946 which is the same number of days supply as on hand at the end of July 1946. This 37 days supply at the end of August 1946 compares with 49 days at the end of August 1945; 66 days at the end of August 1944; 61 days at the end of August 1943 and 53 days at the end of August 1941.

Daily newspapers reporting to the ANPA consumed 260,059 tons of newsprint paper in August 1946, compared with 202,911 tons in 1945 and 224,361 tons in 1941. This was an increase in August 1946 over August 1945 of 28.2 percent and an increase over August 1941 of 15.9 percent. 1941 was the base year for calculating allowable use by newspapers under former WPB Order L-240.

The total estimated newsprint consumption in the United States for August 1946 is 366,280 tons which includes all kinds of uses of newsprint paper. For the first eight months of 1946 it is estimated to be 2,809,707 tons.

During the first eight months of 1946 the reporting newspapers used 1,994,892 tons of newsprint, an increase of 29.2 percent over the first eight months of 1945 and an increase of 4.6 percent over the first eight months of 1941.

Professional Group Opens Season

CHICAGO—The Chicago Professional Paper Group opened its 1946-47 meeting season with a dinner at the Chicago Bar Association on Monday evening, September 16. As the first of what is promised as "a new and greater season of interesting and informative meetings" the program committee presented as speaker Albert Kner, in charge of package design of the Container Corporation of America.

The first mailing of the current season reports that regular announcements of the initial meeting are to be sent to everyone on the Group's mailing list but that the list will be curtailed to include only members in good standing from that time on.

Congress Opens Bids For Fourth Quarter

WASHINGTON, D. C.—Bids were received on Monday of this week by the Joint Congressional Committee on Printing for paper for the use of the Government Printing Office for the three-months period beginning October 1st. The Committee will meet September 23rd to consider awards. The bids received today were as follows. Where no bids are quoted none was received.

Newsprint

No. 1—800,000 lbs., 24x36—64; rolls, 19, 24, 36, and 48 ins. wide (3-inch fiber cores). Weight of cores and wrappers shall be included in net weight.

Machine-Finish Book

No. 3—400,000 lbs., 25x38—70; flat, cut any size, min. 21 ins., max. 48 ins.

No. 4—875,000 lbs., 25x38—70; flat, cut 24x38, 28x38, and 38x48 ins.

No. 5—875,000 lbs., 25x38—70; flat, cut 24x38, 28x38, and 38x48 ins.

Mudge Paper Co. (50,000 lbs. only) 9.04c

No. 6—150,000 lbs., 25x38—70; rolls, 28½ ins. wide (3-inch fiber cores).

No. 7—350,000 lbs., 25x38—70; rolls, 19 and 38 ins., wide (3-inch cores).

Barton, Duer & Koch Paper Co. (OPA ceiling prices at time of shipment).. 8.20c
Mead Sales Co. 8.21c

No. 8—350,000 lbs., 25x38—70; rolls, 19 and 38 ins., wide (3-inch cores).

No. 9—700,000 lbs., 25x38—70; rolls, 24, 36, and 48 ins. wide (3-inch fiber cores).

Mudge Paper Co. (200,000 lbs. only 8.20c

No. 10—200,000 lbs., 25x38—90; flat, cut any size, min. width 24 ins., max. width 48 ins.

Machine-Finish Book End Paper

No. 18—80,000 lbs., 25x38—160; flat, cut 38x50 ins.; the grain to run the 38-inch way.

Mead Sales Co. 8.35c

Offset Book

No. 19—600,000 lbs., 25x38—80; flat, cut any size, min. width 24 ins., max. width 48 ins., the grain to run lengthwise of the sheet.

Mudge Paper Co. (200,000 lbs. only) 10.58c
Central Ohio Paper Co. (500,000 lybs. only—price prevailing at time of shipment 10.57c

No. 20—1,400,000 lbs., 25x38—100; flat, cut any size, min. width 24 ins., max. width 48 ins., the grain to run length-wise of the sheet.

Antique Book

No. 22—50,000 lbs., 25x38—90 and 120; flat, cut 32x42, 33x43 and 38x50 ins.

Stanford Paper Co. (OPA ceiling price attime of shipment) 8.88c
Mead Sales Co. (120 lb. base only 8.35c

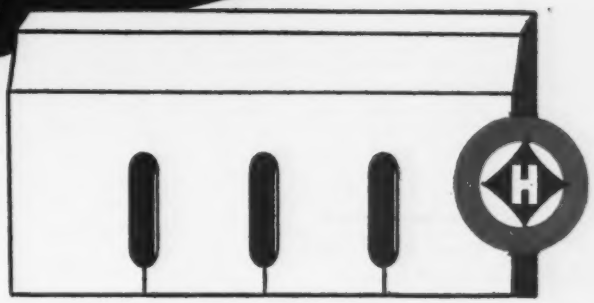
50% Lightweight Machine Finish Book

No. 24—50,000 lbs., 25x38—60; flat, cut 30x43 and 38x48 ins. Min. order 10,000 lbs.

(Continued on page 26)

Heppenstall has doubled their capacity

on E.I.S. Chipper Knives



Our sincere thanks to you who have been tolerant during a difficult period. Now, we are ready to meet the greatly increased demand for Heppenstall E.I.S. Chipper Knives. The installation of new and modern equipment has made it possible for us to produce knives, faster and in much larger quantities than ever before.

Heppenstall Chipper Knives are always the most economical and profitable to use. We back that statement with a long-established guarantee—more production and less waste per grind, longer periods between grinds, and more grinds per knife. They'll show a lower unit cost than any chipper knife on the market! Isn't that all you ask? All we ask is that you try them! The Heppenstall Company, Pittsburgh 1, Pennsylvania.

assuring faster deliveries—
eliminating overdue orders

Midwest Approves Removal of Ceilings

CHICAGO—Reaction in Chicago was held to be favorable to the suggestion made by W. 0. W. Tinker, executive secretary of the American Paper and Pulp Association that the OPA remove ceilings on wood pulp to erase present shortages of paper and paperboard. Chicago interests heard that Mr. Tinker had made this recommendation when speaking before the Printing Industry of America, Inc., and reports indicated that the Chicago contingent, at least, would back him up on the suggestion. While Mr. Tinker was reported to have pointed out that production of newsprint and book papers, among others, was breaking all records, the industry agreed with him that a great wave of imports of Scandinavian pulp, badly needed in this country, would not materialize if present OPA ceilings are held.

The APPA head was quoted here as saying that Sweden increased the value of the krona by 14 percent in July but that OPA had recently raised price ceilings by only 10 percent. Under these arrangements, Mr. Tinker argued, Swedish shippers would receive less money for their shipments and are not expected to send much pulp to the United States unless some intergovernmental subsidy is arranged.

Local paper trade experts also agreed with Mr. Tinker that in a free market the readjustments so badly needed would be automatic and certain instead of hesitant and uncertain and also fell in line with the idea that if decontrol is allowed all production records would be broken by an amazing volume of paper and paperboard, bringing a quick balance of supply and demand. There is little hope expressed in Chicago circles that such a balance can come under OPA control.

IPCo Book and Bond Staff Gets Five-Cent Raise

GLENS FALLS, N. Y. — A general wage increase of five cents an hour was announced for 4,500 employes of the book and bond division of the International Paper Company. The payroll boost was negotiated in a two-day conference between representatives of the firm and officials of the American Federation of Labor. The increase affects employes of plants in Corinth, Ticonderoga, Tonawanda and Niagara Falls, N. Y.; Yorkhaven, Pa., and Livermore Falls, Me.

The pay jump brings to 20 cents an hour the wage increases granted to I.P. employes since the end of the war.

Reservoir Keeps Production Up In Adirondacks Area

COHOES, N. Y.—Many of the large paper mills in the Hudson Valley depending on water power are now in operation only because of the Sacandaga Reservoir. The increased flow from the huge reservoir has been proceeding for the past several weeks and has allowed the power plants to maintain operations. Among the firms which have operated without curtailment or shutdowns during the summer months are the Finch, Pruyn & Co., Glens Falls; International Pulp & Paper Co., Palmer Falls, Corinth and Fort Edward; Hudson River Power Corp., Sherman Island; Union Bag & Paper Co., Hudson Falls; West Virginia Pulp & Paper Co., Mechanicville, and the Ford plant at Green Island. The reservoir not only serves as an economical barrier against unemployment but also acts as a boon to navigation at the Port of Albany. The reservoir was built by the state at a cost of about $12,000,000 and yearly assessments are levied on the various industries for its maintenance.

OPA Raises Prices On Facial Tissue

WASHINGTON—Ceiling prices of facial tissues have been increased eight percent over March 1942, levels at all levels of sale, including retail, by the Office of Price Administration. The increase, effective September 18, has been granted manufacturers to cover recent higher costs for labor and matrials and bring them back to their 1936-39 base period rate of return on net worth.

Distributors are permitted to pass on the increase in accordance with requirements of the new price control act. While retail increases will vary depending on the size and type of the tissue being sold, boxes selling at two for 25-cents can be raised one cent each while 25-cent boxes can go up two cents.

Generally the industry has kept prices at the March 1942 levels. Some manufacturers were previously given authority to make individual adjustments in their ceilings. Such manufacturers cannot add the eight percent to adjusted ceilings but only by enough to match their March 1942 levels, or they have the option of selling at the previously authorized adjusted levels.

Rep. Rogers Asks OPA To Revise Pricing

LOWELL, Mass.—Rep. Edith Nourse Rogers (R.-Mass.) has asked the OPA to revise its price regulations on paperboard in order to permit users of that product in Massachusetts to buy from distant manufacturers. In her telegram to the Washington office of OPA, Mrs. Rogers said that current regulations compelled manufacturers to pay all freight and delivery charges and that, for this reason, the manufacturers would not sell to dealers in this state.

She asked that prices be established at the manufacturers' delivery point. She said there was "a great shortage" of paperboard in Massachusetts.

Lining Converters Get Higher Price

WASHINGTON—Increases in converters' ceiling prices for the process of lining paperboard have been allowed by the Office of Price Administration to prevent curtailed output of lined paperboard because of higher conversion and paper costs.

The increases, effective September 16, 1946, per 100 sheets measuring 25 by 40 inches, are 40 cents where the converter supplies the lining paper, and 25 cents where the customer provides the lining paper.

The new ceilings, per 100 sheets, where the converter supplies the lining paper, will be $1.40 when news lining paper is used, and $1.90 when book lining paper is used. Where other lining paper is supplied by the converter, a maximum of 40 cents per 100 sheets may be added to the existing ceiling. In the case of specialty grades of lining paper supplied by the customer, a maximum of 25 cents per 100 sheets may be added to the prevailing ceiling.

Most of this lined paperboard is sold to manufacturers of set-up boxes, who in turn sell the finished boxes to candy manufacturers and the like for use in packing their merchandise. Box manufacturers are permitted to pass on today's increases, which will be absorbed by the candy manufacturers and others buying the boxes.

OPA pointed out that where converters have received an individual adjustment in their ceilings, they have the option of continuing with their adjusted ceilings or adding the amounts allowed today to their original ceilings, whichever they prefer.

Wage Board Limits Increases To 15 Cents for Pricing Purposes

BOSTON, Mass.—The National Wage Stabilization Board has upheld the contention of public members of the New England Wage Stabilifiation Board that the general pattern of wage increases in the paper industry of this region has been 15 cents per hour since VJ day and should be limited to that amount for pricing purposes. The announcement was made late last week by Regional WSB Chairman Lester Cramer.

The case involved 168 members of the United Paper Workers of America (CIO) employees of the National Folding Box Co., New Haven, Conn. The company and union jointly requested approval of the regional WSB of a general increase of eight and a half cents per hour following a general ten cent raise granted last January.

Cramer said the National WSB has modified the decision of the regional board allowing only five cents of the eight and a half cent increase to be used before OPA in any request for increased ceiling prices.

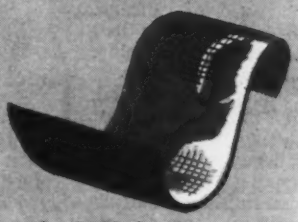
Reservoir for Industry

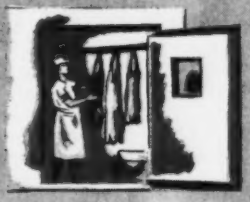
In drum or tank car lots . . . whether for construction or maintenance, processing or production . . . the reservoir of Flintkote Industrial Products offers many time-and-money-saving advantages.

Tire cord solutioning is one of the many applications of Flintkote Syntex* aqueous dispersions of rubber.

An outstanding use of Flintkote Hydralt* coatings is the protection of steel against corrosion.

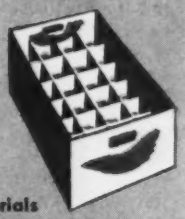
Flintkote fluid rubber compounds are used for rugs and carpet backing and also as saturants, coatings, and bonding cements.





All types of insulation require the kind of protection from the elements that Flintkote insulation coatings provide.

Fibre board for containers is made water-resistant with Flintsize† added during manufacture.



Flintkote sound-deadening materials and industrial adhesives are important components of automobiles and many other consumer durable goods.

*TM Reg. U. S. Pat. Off.
†Trade-mark

A reservoir of supply for your needs. That's another way of describing Flintkote's complete research, development and manufacturing facilities. Let us help you. Write us today.

Flintkote-Products for Industry

THE FLINTKOTE COMPANY · INDUSTRIAL PRODUCTS DIVISION
Atlanta · Boston · Chicago Heights · Detroit · Houston

FLINTKOTE INDUSTRIAL PRODUCTS

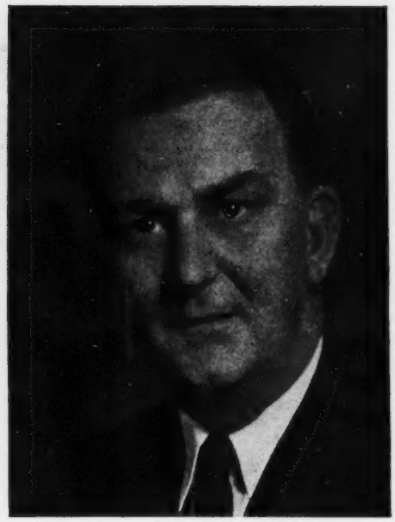
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.
Los Angeles · New Orleans · Washington · Toronto · Montreal

Bird & Son Advances Executive Heads

EAST WALPOLE, Mass. — Promotions involving top management officials have been made by the board of directors of Bird & Son, Inc. Wesley C. Ahlgren was elected secretary-treasurer of the company to fill the vacancy caused by the resignation of Axel H. Anderson who was recently made president. Mr. Ahlgren has been assistant secretary-treasurer. The following were elected vice-presidents to assume their respective duties immediately: Ralph A. Wilkins, vice-president in charge of paper products division (including dry felt), production and sales; H. Eugene Sawyer, Jr., vice-president in charge of flooring division, production and sales; Eli L. Chamberlain, vice-president in charge of building material division, production and sales; Richard C. Floyd will continue as vice-president and consultant.

Ahlgren has been with Bird & Son for twenty years, having joined the organization on July 1, 1926, as assistant auditor. He was promoted to auditor and office manager in 1930. In 1937 he was made assistant secretary-treasurer and also assistant treasurer of the Berry Asphalt Co. of Chicago.

Ralph A. Wilkins has been connected with Bird & Son since 1923 when he joined the organization as assistant superintendent of the paper mill. He was graduated from the University of Maine in 1919. During his junior and senior years at college he became interested in paper making while working summers at the Eastern Manufacturing Company paper mill in Bangor. Following graduation he entered the research laboratories of the National Aniline Company of Buffalo, remaining there six months, and then returning to the paper mill at Bangor, first as research chemist and later as foreman in charge of the beater room. In 1922 and 1923 he taught paper making at the University of Maine, and in September 1923 joined Bird & Son. In 1930 he was made paper mill superintendent from which post he was promoted to general superintendent of the paper, box and carton divisions in 1935. In January of this year, upon the resignation of Charles W. Conrad, he was appointed manufacturing manager in charge of all production operations of Bird & Son. This position is now abolished and Mr. Wilkins as vice-president takes over both production and sales of the paper products division, including dry felt.



RALPH A. WILKINS — WESLEY C. AHLGREN
Named Vice-President and Secretary-Treasurer, respectively, by Bird & Son

Hampden Staff Picnics

HOLYOKE, Mass. — Forty-two office employes of the Hampden Glazed Paper Co. gathered at Mount Tom reservation recently for a corn roast. Acting as chefs were Alden Holt and Julian Pomfrey. After the roast there was community singing and a baseball game which was won by the cost department. James Cronk entertained with a dance, and James Leyden of New York City, vice-president of the company, sang a solo. Duets were rendered by William Lamb and Donald Leyden.

Seek to Enjoin Smoking Stack

PITTSFIELD, Mass. — Charging that soot from a smokestack of the Brightwater Paper Company of Adams has ruined the paint on their homes, damaged their fruit and vegetable gardens and prevented them from hanging out clothes and opening windows, Augustine Malione and sixteen other Adams residents this week filed a bill of complaint in Superior Court against the company.

The petitioners said in the bill that the company has attached to its smokestack an arrangement for blowing out the soot from boilers, boiler tubes and the chimney, and alleged that the soot emitted was blown on their premises rendering them "unfit for habitation." They said they suffered great discomfort for the past five years.

H. P. Smith Appoints Burgess Technical Service Engineers

CHICAGO — The H. P. Smith Paper Company last week named L. M. Burgess to the newly created position of technical service engineer. This step is in line with the company's policy to render complete field service to its many customers who are seeking to obtain improved quality in their packaging and wrapping materials. Special technical assistance is now available to help solve problems involving the application of laminated metal and plastic foils, and synthetic resin treated papers for a variety of unusual functional end uses. The same service is extended to consumers of regular waxed papers in industrial processing and packaging.

Mr. Burgess has been with the company for a number of years as chief chemist in the development department of the company's expanding technical division. He is well acquainted with the paper converting industry and has had wide experience in the practical application of modern chemical developments to specialize industrial packaging materials and processes.

Madison Celebrates Labor Day With Local 17 Parade

MADISON, Me. — Nearly four thousand persons gathered in Madison, to attend the celebration of Labor Day. The program was sponsored by Local union 17 of the Pulp, Sulphite and Paper Mill Workers of America.

The day was observed with a parade, sports in the afternoon and a grand ball in the evening.

The weather did not interfere with the greater part of the program, but rain did prevent the last number on the schedule, the baseball game between the American Legion and Phillips.

The parade started at 10 o'clock from the Anson town hall, with line of march across the bridge, through Main street to the Madison Memorial High school.

Michigan Superintendents Meet at Kalamazoo

KALAMAZOO, Mich. — The first fall meeting of the Michigan Division of the American Pulp and Paper Mill Superintendents Association was to be held Thursday evening, September 19 at the Park American Hotel, Kalamazoo, Michigan. The speaker for the evening was Wayne Armstrong, Labor Market Analyst, of the Kalamazoo United States Employment Service Office.

Another BECKMAN pH Advancement!

THE BECKMAN MODEL H PORTABLE AC pH METER

Some Important Features of The Beckman Model H

Full AC Operation: The Model H is completely self-contained and operates directly from standard 115 volt AC lines without accessory equipment of any kind.

High Accuracy: The accuracy of the Model H instrument is equivalent to that of the well known Model M and Model G Beckman pH Meters. For rapid work, accuracies of 0.1 pH unit are easily obtained, and more careful attention to technique permits determinations to 0.02 pH units. Such high accuracy has never before been available in a compact AC pH Meter.

Single-Point Buffer Calibrations: With the Beckman Model H it is not necessary to calibrate with two buffer solutions. The Model H incorporates a unique electronic circuit that permits accurate readings regardless of variations in resistance of the glass electrodes due to aging or due to electrode temperature changes after calibrations. This important advantage is accomplished without need for multiple buffer calibrations.

Maximum Temperature Stability: After a short warm-up period, subsequent change in calibration of the instrument due to temperature effects is very small—only about 0.1 pH unit in the first two hours and 0.05 unit subsequently. When maximum accuracy is required, this change may be instantly checked and corrected *without rechecking against buffer solution.*

Full Temperature Compensation, 0 to 100° C: A built-in temperature compensator covering the full range of 0° to 100° C can be set to compensate automatically the effect of temperature changes on the EMF of the glass electrode over the entire pH range of the instrument. Thus, the pH at the electrode temperature may be read directly from the dial without calculation or corrections.

Direct Millivolt Scale: The Model H Meter is graduated in millivolts as well as pH units, and a range switch permits measuring directly either in millivolts or pH at will.

Rugged Lightweight Construction: The Model H is housed in a cast aluminum case with an attractive dark gray wrinkle finish. The instrument weighs approximately 10 pounds, complete, and is easily carried. For maximum operating convenience the meter dial and all controls are mounted on a sloping panel.

The First Portable AC pH Meter with DC Accuracy, Simplicity and Dependability

NO LONGER need you sacrifice accuracy and dependability to get the convenience of AC operation in a portable pH Meter. For now the same organization that pioneered modern glass electrode pH equipment, and has pioneered every major advancement in modern pH instrumentation and methods, brings another important development... a portable pH Meter that operates from standard AC current *without sacrificing any of the accuracy and dependability that are so essential in modern pH applications.*

This new instrument—the Beckman Model H pH Meter—has been in development over a long period of time. Many different designs and circuits were tested and rejected before an instrument was perfected that meets the rigid Beckman standards of excellence. The Model H Meter is not just an "AC" pH Meter. It is an instrument embodying advancements in circuit design that insure the same high operating efficiency and accuracy that have made Beckman pH Equipment standard throughout the world.

A few of the many unique features incorporated into the Beckman Model H pH Meter are outlined at right. Contact your nearest distributor of Beckman pH Instruments for further details... or write direct. *Beckman Instruments, National Technical Laboratories, South Pasadena 16, Calif.*

BECKMAN **INSTRUMENTS CONTROL MODERN INDUSTRIES**

Stock Prices Accent Mill Equipment Costs

TORONTO — Pulp and paper stocks which traditionally decline at a greater pace in a falling market than other securities and usually show the greatest percent rise in bull markets, are again giving economists occasion to review the industry's position. The reason for their more emphatic reaction is supposed to lie in their particular type of capitalization. The heavy investment required to construct a pulp and paper mill usually requires the use of a funded debt and preferred stock, as well as common stock. This means that in a bull market earnings accrue to the junior equity, after bond interest and preferred dividends have been met, at a proportionately faster rate than with companies with but one type of security outstanding, or with a smaller quota of fixed charges. In a bear market the converse holds true.

During the last three weeks pulp and paper stocks have receded farther than the majority of stocks. While the index of 30 combined stocks experienced an 18 percent price set-back from the 1946 highs, pulp and paper stocks have dropped 25 percent.

Yet the pulp and paper industry is presently selling all it can produce and current prices ensure a better return on invested capital than in any previous period. The industry is still in a sellers' market and there is nothing in the immediate future to upset this condition, in the opinion of those close to the market. Why, then, such a recession in pulp and paper values? Experts say that a declining security market traditionally has shown no respect for company earnings. The present market appears to be no exception and analysts expect pulp and paper stocks to be carried further downward.

Canadian woodpulp mills have been operating at close to 90 percent of their rated 6.3 million tons annual capacity for more than five years and although there is nothing in sight to suggest any change in this condition, critical observers are taking inventory of the situation in an effort to determine how long the market position will support capacity operations.

Last year woodpulp production in Canada totalled 5.6 million tons, valued at approximately $275 million. This year production is likely to equal or perhaps exceed, the 1945 figure and the dollar value will be at least $300 millions, it is computed. Projected capacity of new mills in Ontario and New Brunswick have been estimated at close to 500,000 tons annually, or about 8 percent of the present Canadian woodpulp capacity.

Paper and paperboard mills in the U. S. are using all the woodpulp they can get and are still critically short. Canada is sending into this market about 1.5 million tons every year from which the industry is realizing approximately $115 million. Canadian mill production requires the balance of the country's woodpulp, except for what goes to other markets as token shipments. Production can go up only slightly from existing levels, but could go down a long ways if a break in economic activity should occur.

Scandinavian exports to the U. S. have been meagre, but might be resumed in volume if, for any reason, their present lucrative European markets should shrink. However, it is not expected that the recent U. S. boost of ten percent in the selling price on imported woodpulp will attract any more Scandinavian woodpulp. The Swedish krona was raised 15 percent recently so that on balance Scandinavian woodpulp exporters now have a 5 percent less incentive than earlier in the year to sell in terms of U. S. funds.

Another factor favorable to the Canadian woodpulp exporter is that U. S. production is now being sustained to a certain extent by OPA subsidies, designed to keep up production from marginal and low-cost woodpulp mills. It is thought here that these subsidies will be withdrawn as soon as supplies increase. This should mean that exports from Canada should hold up, for some time at least, though some contraction in U. S. demand is to be expected eventually.

Perhaps the most important factor calculated to keep the Canadian woodpulp exporter optimistic is the official U. S. view that consumption of woodpulp in that country will stabilize at a level of about 10 million tons annually. This would be two million tons less than the present level, but higher than pre-war levels. Such a rate of consumption in the U. S. would probably mean that Canada would ship to that country at least one million tons of woodpulp annually, or perhaps more, unless European exporters step up production to pre-war levels. In that event Canada would be exporting twice as much woodpulp as before the recent war.

Masonite Wins Award For Annual Report

CHICAGO — The annual report to stockholders of Masonite Corporation has been awarded first place among the building supplies industry, reports Weston Smith, vice-president of the magazine *Financial World* and director of the magazine's annual survey of stockholders' reports, reported recently. A bronze "Oscar of Industry" signifying the selection will be awarded at a banquet in the grand ballroom of the Waldorf-Astoria in New York, October 4.

Financial World's sixth survey examined the annual financial reports of 3,000 companies in 80 different industries, Mr. Smith pointed out, and the competition was the keenest yet for the "Best of Industry" awards.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending September 14, 1946

STOCKS

	High	Low	Last
A. P. W.	6	4¾	5⅞
Armstrong Cork Co.	46½	42½	46½
Celotex Corp.	26¼	23	26
Celotex Corp., pf.	21⅛	20	20¼
Certain-Teed Products Corp.	18⅝	16⅛	18¼
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	46¾	42½	46¾
Champion Paper & Fibre Co., pf.	110½	108¾	108¾
Congoleum Nairn Co.	29½	26¾	28¼
Container Corp. of America	38½	35½	38½
Continental-Diamond Fibre Co.	10	9⅛	10
Crown-Zellerbach Co.	29⅞	27¼	29½
Crown-Zellerbach Co., pf.	112¼	110	112¼
Dixie Cup Co.	37	32	35
Dixie Cup Co.—A	52⅝	49	51
Flintkote Co.	32¾	30¾	32½
Flintkote Co., pf.	111	108	108
Robert Gair	8	7¼	8
Robert Gair, pf.	20¼	19⅜	19⅜
International Paper Co.	44	40½	44
International Paper Co., pf.	105	103	103
Johns-Manville Corp.	123½	117½	121
Johns-Manville Corp., pf.	111	111	111
Kimberly-Clark Corp.	27⅞	26	26⅛
Mac Andrews & Forbes	35¼	32	33½
Mac Andrews & Forbes, pf.	....	....	....
Masonite Corp.	57	48	56½
Mead Corp.	21	18⅜	20½
Mead Corp., pf. 4¼	105½	105¼	105¼
Mead Corp., pf. 2	48⅝	47	48
National Container Corp.	29½	25⅛	28⅛
Paraffine Companies, Inc.	64⅛	56	64
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	20⅜	18	19⅜
Rayonier, Inc., pf.	37⅛	35	35¾
Ruberoid Co.	47¼	40½	44
Scott Paper Co.	50	46	46
Scott Paper Co., pf.	107¼	106½	106½
Sutherland Paper Co.	41¼	39	40¼
Union Bag & Paper Corp.	28½	25⅝	28⅛
United Paperboard Co.	11⅛	10½	10⅜
U. S. Gypsum Co.	110¾	102½	104½
U. S. Gypsum Co., pf.	205	203	203
West Virginia Pulp & Paper Co.	42¾	37⅛	39
West Virginia Pulp & Paper Co., pf.	113½	112¾	112½

BONDS

Abitibi Pulp & Paper Co. 5s '53	....	....	....
Celotex Corp. 3½s '60	105	103⅜	103¾
Certain-Teed Products Corp. 5½s '53	....	....	....
Champion Paper & Fibre Co. 5s '63	104¼	104¼	104¼
International Paper Co. 5s '47	101⅞	100½	101⅛
Mead Corp. 3s '66	103¼	103¼	103¼

New York Curb Exchange

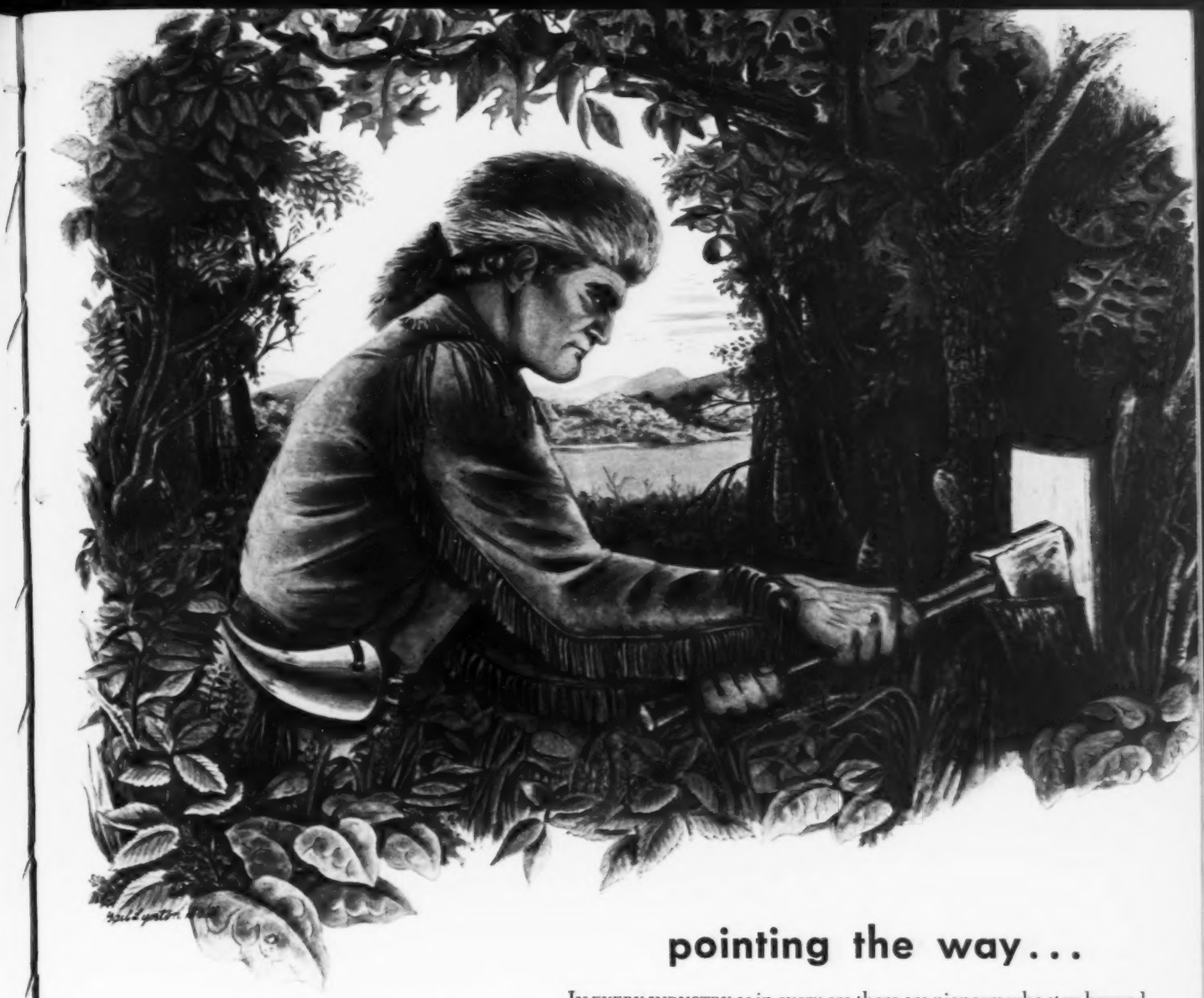
High, Low and Last for Week Ending September 14, 1946

STOCKS

	High	Low	Last
Great Northern Paper Co.	41	39	40¼
Hummel-Ross Fibre Corp.	14¾	11¼	14¾
St. Regis Paper Co.	10½	9½	10⅛
Taggart Corp.	8⅜	8⅛	8⅛

BONDS

American Writing Paper Co. 6s '61	....	....	....



pointing the way...

THE PIONEER CREED

Always New, Always Better

Since the turn of the century Niagara has pioneered basic electro-chemical development in this country. This experience is reflected not only in Niagara product quality but also in the efficiency of the service Niagara extends to customers seeking to blaze new trails to product improvement.

IN EVERY INDUSTRY as in every era there are pioneers who step beyond the settled boundaries to "blaze" new trails toward new potentials in unexplored fields. In the field of electro-chemical development in America, Niagara Alkali Company has pioneered the way. First to produce caustic potash, carbonate of potash and liquid chlorine in this country and among the first to produce other chemicals of this type, Niagara has a long history of leadership behind its present service. This experience of Niagara consistently accrues to the benefit of users of Niagara products, providing dependably superior characteristics in product performance. This can become of immeasurable value to you in using such materials to improve the quality of your products or the efficiency of your manufacturing processes. Niagara Alkali Company, 60 East 42nd Street, New York 17, N. Y.

AN ESSENTIAL PART OF AMERICA'S GREAT CHEMICAL ENTERPRISE

Niagara Alkali Company

CAUSTIC POTASH • CAUSTIC SODA
CARBONATE OF POTASH

LIQUID CHLORINE • NIAGATHAL
PARADICHLOROBENZENE

National Blank Book Realigns Executives

HOLYOKE, Mass., Sept. 14—In moves designed to meet the future growth of the National Blank Book Co., a number of important changes have been made in the company's personnel, both in the main plant and offices here and in the Chicago branch. The announcement of the realignment of personnel was made at a dinner meeting of the company's foremen, department heads, and executives at the Roger Smith Hotel last night.

Richard P. Towne, treasurer of National, in making the announcement stated that old time employes were promoted to form the new organization because of loyalty and past performance.

J. M. Towne, who is president of National, will be director of manufacturing and will be assisted by Richard M. Weiser, who has been promoted from superintendent to manufacturing manager. Carl G. Rising, formerly superintendent of the metal division, has been made chief engineer of the whole company, while General Sales Manager Paul B. Buckwalter, whose headquarters have been in New York, is returning to Holyoke to locate sales headquarters at the local factory.

Also included in the personnel promotions is that of Harold Hansen, formerly manager of special jobs, to the position of superintendent of the main division and the advancement of Roland Peltier, former assistant superintendent, to superintendent of the metal division. The purchasing department will be expanded and R. W. Ely, purchasing agent, will be aided by Dred Hafmann, who has been promoted to be assistant purchasing agent.

Merchandising Manager Albert E. Farr, under the new setup, will have charge of both stock merchandise and special merchandise and will have as assistant managers, Herbert Burton, social goods; Roy Kirchner, commercial and equipment lines; Francis Fleming, special merchandise and Clayton Harvey, product analyst.

Controller and Assistant Treasurer Alton Hughes outlined the functions of his department at the dinner, which under the new setup will be as follows: Walter Holman, auditor; Frank Koehler, cost accounting manager; Alphonse Wilhelm, general accounting manager and Mary Shea, credit manager.

Sales Manager Buckwalter, in directing sales at the Holyoke firm, will be assisted by these department heads: John Long, service and traffic manager; Harris Tanner, order department manager; Albert E. Farr, merchandise manager, and D. C. Hegarty, advertising and sales promotion manager. Buckwalter is well known in Holyoke, having worked here in various capacities before being assigned as branch manager of the Chicago and New York offices. He plans to move his family here shortly.

Rising in his new position as chief engineer will be assisted by Theodore Desroches, industrial engineer; Wendell Ingham, tool and equipment designer; Edward Chartier, tool room foreman, and Fred Wood, specification engineer.

It was also announced that Sidney Whiting will continue as production and planning manager; Stanley Schade as research and development manager assisted by his father, John Schade in the mechanical end; William Ferguson as maintenance superintendent, and Donald Grenier as personnel manager, assisted by Elbert Kjoller.

A considerable expansion of the company's fast-growing Chicago plant was also announced in which W. Brewster Towns, formerly of this city, will not only be in charge of the western sales division, but will also be plant manager of the enlarged Chicago manufacturing facilities. Towne will be assisted in Chicago by: Chester O'Connell, personnel manager; Harry Van Ornum, office manager; Harold Ironsides, as plant superintendent and William Muir, as assistant plant manager. William McGracken will move from Holyoke to Chicago to become time study supervisor. At Chicago Edward Kraft will be in charge of production and planning.

The National was assisted in planning for future operations by Frank Wallace, formerly of National and his assistant, Robert Hall, both of McKinsey & Co., management consultants of New York.

Maine Industries Seek More Employes

AUGUSTA — Several Maine business leaders spoke optimistically last week over fall and winter prospects for this State, although they added the qualification that seems to be a necessary part of all industrial pronouncements these days—"unless there are strikes."

Paper and textile companies, which furnish employment to the bulk of Maine people, are already operating at capacity levels permitted by volume of available labor. The big pulp-paper industry wants literally thousands of employes for woods operations. Broad industrial activity in this State means prosperity for the power and the railroad companies along with the merchandising field.

So-called common labor remains a scarce commodity in this State, it was agreed last week. Wage levels inflated during the war refuse to go down to any important degree, and employers complain that the usual spread between charges for skilled and unskilled workers is too far out of line. Of more importance is the fact that it is not so efficient when judged by prewar standards. More labor at more cost bulks large in all contract work today; too large, some day. Meanwhile, the trend toward mechanization continues, but machines cannot displace certain kinds of labor.

Ready Memphis Mill For Kleenex Output

NEENAH, Wis. — Planning of all building alteration at Kimberly-Clark Corporation's plant at Memphis, Tenn., has been completed and contracts for the reconversion are being let with Memphis contractors, according to a report issued by J. T. Whelan, assistant chief engineer of K-C. The corporation purchased the plant earlier this year from the government after it had been used during the war period for the manufacture of B-25 bomber parts.

With the completion of alteration design and engineering, work is nearing completion on machine-room design and has been started on process engineering, including materials handling and conveying equipment.

Other construction and alteration work in progress includes the installation of a modern kitchen, restaurant and locker-room areas for the use of Kimberly-Clarkers, plus partitions to separate converting and machine-room areas and, in general, to meet sanitary requirements demanded by company operation.

Progress is also being made on four wells which are now being drilled to yield the quantities of water which corporation manufacturing will require.

All major manufacturing equipment is on order, it was reported by H. G. Boon, vice-president in charge of operations, including two creped wadding machines and auxiliary equipment, converting equipment and machine tools for eventual machine- shop operation. Converting of raw material is expected to begin about the middle of November in the new plant.

The first creped wadding machine is expected in the second quarter of next year, at which time new employment will begin to reach its ultimate level. Machinery delivery continues to be difficult, Mr. Boon said.

The Kimberly-Clark operation in Memphis will produce the trade-name product of Kleenex, and eventually will include Kotex, Delsey and other trade-name products of International Cellucotton Products Company, which markets the sanitary products manufactured by Kimberly-Clark's creped wadding division.

Kimberly-Clark production, in addition to the cellulose items incorporated in Memphis activity, are book papers, plastic papers, absorbent and non-absorbent cellulose wadding for use in packaging and insulation materials, such as the trade-name products of Kimpak and Kimsul.

Lakeview Wins Softball Title

NEENAH, Wis.—The Lakeview softball team, champions of the Neenah Senior Softball League, was honored at a dinner September 12. The league championship trophy was presented to the team.

Chemists Forecast Better Paper: See New Uses for Waste

CHICAGO — The American Chemical Society's meetings last week, 110th of a long series of tremendously resultful programs, held much of interest to the paper trade and several technical experts identified with the industry were on hand for the event. From out of the long series of speeches and conferences several subjects of interest developed including the prophesy that better wrapping paper, book and magazine covers and washable wallpaper is in the making because of new discoveries in cellulose coatings. Three scientists representing the Eastman Kodak Company make these predictions and add that they expect even greater water-resistant qualities will be developed through experiments with plasticizers and with certain waxes.

At the same meeting science also reported new uses for waste wood pulp and sawdust which is credited with yielding high grade yeast and vitamins in quantity. This announcement came from Dr. Robert S. Aries of Polytechnic Institute of Brooklyn. Representatives of the Forest Products Laboratory of Madison, Wisconsin, also told the assembled chemists that a strain of chemically "trained" yeast added to a ton of wood waste produces approximately 64.5 gallons of alcohol.

Dr. Aries, who is also director of the Northeastern Wood Utilization Council, said that waste pulping liquors alone could supply 150,000,000 pounds of yeast of which the Northeast could contribute a third. He added that an almost unlimited supply of yeast could be made from sawdust, cordwood and other unsaleable wood. Dr. Aries said that first commercial utilization will probably be of waste pulping liquors because the remaining wood material is already degraded, eliminating the need for preliminary treatment.

Production of lactic acid from the wastes of sulfite paper mills was described by Drs. Leonard and Peterson of the University of Wisconsin. Assuming 2000 gallons of waste liquor from each ton of pulp and 95 percent recovery by the extraction, these two scientists said that 285 pounds of lactic acid and 75 pounds of acetic acid may be obtained from each ton. The speakers added that the tremendous potential capacity of a single sulfite pulp mill would far exceed the present demand for the acids for 9,000,000 pounds of lactic acid "could be obtained annually from a mill producing 100 tons of pulp a day in a 300 day year. The cost of raw materials and steam was computed on the laboratory data as 3.4 cents a pound of acid recovered. If lignin, part of the paper mill waste, were usable as fuel, the Wisconsin educators said, the cost might be reduced to 2.5 cents a pound and the process would give a complete utilization of sulphite waste liquor. They added that no estimate was available for the initial cost of a plant to produce lactic acid.

Restrictions Hold Up United Wallpaper Mill

APPLETON, Wis.—Plans for construction of a plant in Appleton by United Wallpaper, Inc., have been delayed because of government restrictions under the veterans emergency housing program. The company has purchased land at the east city limits on the south side of the Fox river. However, the company's new plant at Aurora, Ill., will be ready for occupancy early in 1947 and will be the largest in the world, the company says in its annual report.

The company and its subsidiaries reported net income of $759,413 for the fiscal year ended June 30. This is equal after preferred dividends to 59 cents per share on the common stock, compared with the net profit of $533,857, or 42 cents per common share in the preceding year.

Net sales decreased to $14,373,028 for the year from $16,327,390 in the preceding year. The annual report explained that while sales of wallpaper and specialty divisions increased, particularly because of higher prices and greater availability of paper, this was more than offset by the loss of war contracts.

Holyoke Wire Force "Cools Off"—Strikes

HOLYOKE, Mass.—In a move to secure a general wage increase of 18½ cents an hour, about 250 employes of the Holyoke Wire & Cable company, in two Holyoke plants, which service the paper industry, left their jobs at 9 a.m. last Friday and threw picket lines around the two plants later in the day.

Mayor Henry J. Toepfert, acting immediately after he received notice of the start of the strike notified the state board of conciliation and arbitration, and called for its assistance in bringing it to an early end.

The strikers, members of the AFL International Brotherhood of Electrical Workers, walked off their jobs following expiration of a 30-day "cooling off" period after they had taken a strike vote.

Negotiations for the increase, now considered a standard pattern, have been in progress for some time. The company is reported to have made no wage offer.

Reports Setting Out Of 40 Million Trees

WISCONSIN RAPIDS — More than 40 million trees have been planted by private industry in the Lake States since the first large-scale forestry program was inaugurated in the area, three-fourths of them in Wisconsin, according to a paper by E. B. Hurst, head of the forestry department of Consolidated Water Power and Paper Company, which he read last week at the annual meeting of the Society of American Foresters at Salt Lake City.

A new division of private forestry was formed at the meeting and Mr. Hurst was asked to give a paper on "Industrial Forestry and the Private Forester in the Lake States." This was the first time that information of this character was assembled in a comprehensive report.

Mr. Hurst gathered his data by a survey poll in which about 30 wood-using industries participated, including Consolidated and the Nekoosa-Edwards Paper Company of Port Edwards, Wis.

Mr. Hurst discussed the beginning and progress of private forestry, recommendations for advancing the field, training of men and future prospects. He stressed that closer cooperation is needed between states and federal forestry agencies and industry. He also urged large-scale research experiments, more adequate fire protection, seedling culture in Minnesota and Michigan, reasonable tax laws, managed cutting and orderly land acquisition.

Fifty percent of the firms replying to Mr. Hurst's questionnaire indicated that private forestry is being practiced and that foresters are employed. The total of technically trained and non-technical men engaged in this work was set at well over 100. Ten percent are holding timber land and will practice forest management.

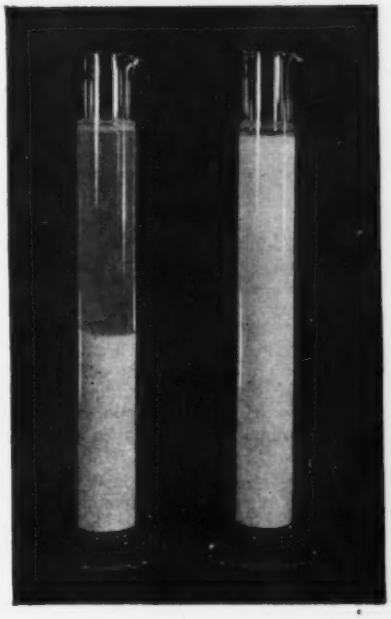
Rising Starts Operation Of New Stock Equipment

HOUSATONIC, Mass.—The Rising Paper Company has recently put into operation modern stock preparation machinery, costing more than $100,000. One part of the installation is unique in design and the local mill is the first fine writing paper mill to make use of the outstanding apparatus. Nearly a year and a half of planning and research by the Rising staff in conjunction with several machinery builders, resulted in the development of the machinery.

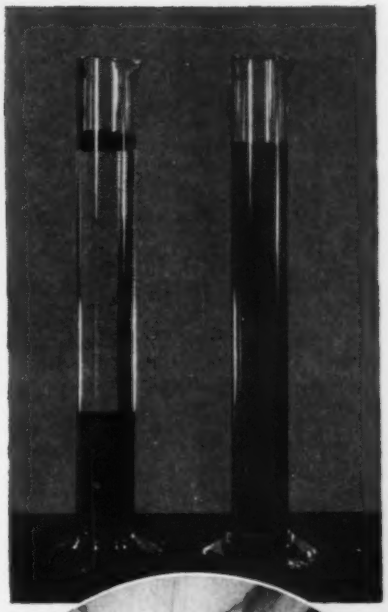
In keeping with the Rising progressive policy, it has plans under way for several other modern installations to improve its products and to increase production. It is also the aim of the company to continue to install new devices to lighten the physical load on workers and to simplify operations, making better working conditions and more economical operations, reports Richard H. Dempsey, general manager.

THESE PICTURES TELL THE STORY OF THE

Dispersive Action OF Calgon ON PIGMENTS

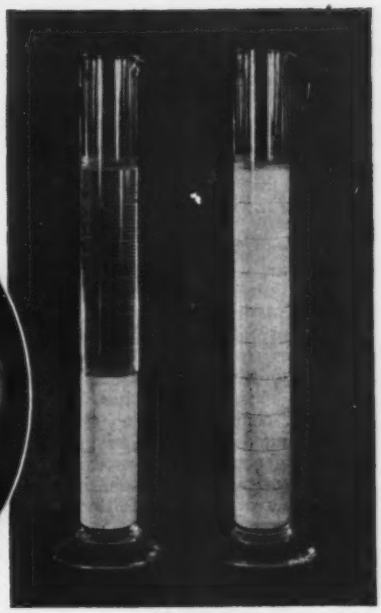


▲ **Titanium oxide slurry** (15%)
—after standing 23 hours. Calgon (8/10 of 1%) has been added to the one at the right.



◄ **Iron oxide slurry** (20%)
—after standing 23 hours. Calgon (1%) has been added to the one at the right.

▼ **Clay slurry** (15%)
—after standing 5 hours. Calgon (3/10 of 1%) has been added to the one at the right.



Clay slurry ► (60%)
Calgon (3/10 of 1%) has been added to the one at the right.

If you are interested in improving the dispersion of pigment in your coating mix, write us for information regarding the application of Calgon to your process.

*T.M. Reg. U.S. Pat. Off.

HAGAN
HALL
BUROMIN
CALGON

calgon, inc.

A SUBSIDIARY OF
HAGAN CORPORATION

HAGAN BUILDING
PITTSBURGH 30, PA.

Seek De-Control Of Casein Prices

WASHINGTON, D. C.—A recommendation for the elimination of price controls on casein has been forwarded to the Office of Price Administration by the Civilian Production Administration, officials of CPA told members of the Processed Casein Producers and Casein Importers Industry Advisory Committees at a meeting recently.

Because of the critical shortage of casein, an important dairy by-product, committee members have advocated that it be decontrolled. OPA officials assured the committee that action on the request would be taken within a few days.

OPA officials warned members, however, that if casein prices "run wild," there is a possibility that it might cause the eventual resumption of control on all dairy products.

OPA feared that if farmers and other producers, attracted by abnormally high casein prices, began diverting milk to industrial casein production instead of food, dairy controls might have to be reinstated to protect our food supply.

Committee members said that the present price ceiling of 33 cents a pound not only sharply curtails domestic production, but also makes it practically impossible to import casein from Argentina, where the market price is reported to be 42 cents. Most members agreed, however, that there was little hope in any event of getting sufficient casein from the Argentine to help materially the United States supply situation, and that this country would have to rely on the increase of domestic production.

Shortage of casein arose as a result of the war, when skim milk was used to make skim powdered milk and other edible solids instead of casein. In addition, the use of casein by the rubber industry has risen in the past year from nothing to a monthly rate of 200,000 pounds. This situation has been aggravated, committee members felt, by the continued imposition of price ceilings on casein, which is used in paper, pharmaceuticals, paint adhesives, and many types of glue in addition to rubber.

Vertical Integration Concerns Supply Men

SPRINGFIELD, Mass.—William Newton, vice-president of the Newton Paper Co. of Holyoke, spoke at a meeting of thirty members of the Eastern Paper Mills Suppliers' Association last week at the Sheraton hotel.

His subject concerned the problems confronting the paper industry due to the vertical integration facing the business. Organized six months ago, the purpose of the paper suppliers' association is to promote interest of the manufacturer in the proper utilization of natural resources.

Chicago SAPEYES Hear Gaw Talk on Color

CHICAGO—The western division of the Salesmens Association of the Paper Industry began its Fall season on Monday noon, September 9 with one of the most interesting "open houses" held in a long time. Attendance of mill representatives and merchants sales representatives was highly encouraging to Ben Babbitt, social chairman and to Ed Edwards of the Howard Paper Company, vice-president of the Division, who introduced George Gaw, director of the Color Research Corporation, as the speaker. Mr. Gaw, secured for the noon luncheon at the Sherman Hotel by Graham Olson, Chicago solicitor of the American Writing Paper Company, discussed "Color and Its Influence on All of Us." It was a forceful discussion enlivened by a consistent use of examples pointing out the dynamic effect of color.

Waste Dealers Protest Truck Interference

NEW YORK—Though their own labor relations have been satisfactorily handled, waste materials dealers in this city have found their trucks are being stopped on the streets by members of another trucking union. This they have protested in a telegram to the mayor.

"Notwithstanding," says the message, "that Local 27 representing waste paper and rag industry truckers have settled their differences and are not now on strike, there is so much interference with their operations that waste paper is particularly becoming a fire hazard. We strongly urge that your Emergency Committee and your Fire Commissioner do everything possible to clear up this situation to avoid disastrous consequences."

Groveton Force Strikes For New Contract Terms

GROVETON, N. H.—Six-hundred AFL employes of the Groveton Paper Co., Inc., were on strike last week seeking higher wages. The strike started when officials of the company and the International Brotherhood of Pulp, Sulphite and Paper Mill Workers (AFL) reached a stalemate in the negotiation of a new contract to replace one that expired September 1. Besides a general wage increase, the union sought paid holidays, shift differentials, and double pay for Sunday work.

Menasha Bowling Season Opens

MENASHA, Wis.—The Banta Men's Bowling League, with 12 teams, started its season at Hendy alleys here Wednesday evening, September 18. The Kimberly-Clark Men's Bowling League, composed of 10 teams, will open its season Thursday, September 26.

Labor Shortage Cuts Hoosier Operations

INDIANAPOLIS, Ind. — Little change was noted in the local paper market last week, with demand far more than the supply. Some Indiana manufacturers say ceiling prices on fine paper continue to hamper them, but even as it is, they are making more fine paper than common lots because of the general price condition. This is true even though some upward price adjustments have been made in lower grades of paper.

The labor pool continues about dry and the turnover in plants is high. Executives say there is scarcely any hope for an improvement before early winter, if then. It is possible that when outdoor work becomes impossible, some of the common labor may be lured into paper plants.

Demand for paper board for construction purposes is extremely heavy and the supply is very short. Mills just are not shipping supplies. Roofing paper is in somewhat better shape, but if there were adequate building materials and the needed housing available, there would be a severe shortage of roofing.

Tissues continued short last week, particularly toilet tissues. In some instances lines were formed at stores when tissues were available and the larger stores say they can secure few deliveries. Demand for waxd paper and cellophane continued lively also, with a very slight improvement in supply. However, jobbers have large backlogs of orders in these items and the supplies are strictly rationed among customers.

Increases in advertising lineage has made demand that newsprint keep pace with that of other grades. One newspaper publisher here stated his paper was turning away nearly as much advertising as was accepted.

Waste paper demand continued good last week with collections improved somewhat. However, the collections are below those of wartimes and every effort is being made to stimulate them. Rag demand also was good with better grades being wanted badly. Demand for bags of all grades was heavy.

Badger Truck Fleet Wins Safety Award

PESHTIGO, Wis.—The truck fleet of Badger Paper Mills, Inc., has won first place among general industrial truck fleets in accident-prevention for the first six months of 1946, according to a report September 10 by the Wisconsin Motor Vehicle department at Madison, Wis. The department conducts a statewide truck and bus fleet safety contest.

The contest, which is now in its fourth year, has fleets reporting in 19 different business classifications. The accident rate of all fleets at the half year mark was 2.39 accidents per 100,000 vehicle miles.

La Boiteaux has long anticipated the growing demands of paper needs throughout the world.

The foreign market is permanent . . . its needs and demands are great for all types of paper and board. La Boiteaux extends to you the complete services of its well staffed, long established contacts and efficient export organization.

THE LARGEST DISTRIBUTOR OF BOX BOARD IN THE UNITED STATES

LaB Service

The La Boiteaux Company, Inc.

2985 MADISON ROAD, CINCINNATI 9, OHIO

NEW YORK • CLEVELAND • CHICAGO • SAN FRANCISCO

Cable Address: LABCO

Congress Opens Bids For Fourth Quarter

(Continued from page 12)

50% Antique Book

No. 26—100,000 lbs., 25x38—80; flat, cut 32x48 and 38x48 ins.

No. 27—30,00 lbs., 25x38—80; flat, cut 22¾x31½ ins. Shall be suitable for writing on with ink.

Supercalendered Book

No. 33—400,000 lbs., 25x38—90; flat, cut any size, min. width 24 ins., max. width 48 ins.

No. 34—750,000 lbs., 25x38—90; rolls, 28½ and 38 ins. wide (3-inch fiber cores).

Mudge Paper Co. (200,000 lbs. only) 8.08c
R. P. Andrews Paper Co. (400,000 lbs. only) 8.08c

Coated Book

No. 37—500,000 lbs., 25x38—100; flat, cut any size, min. width 24 ins., max. width 48 ins.

Barton, Duer & Koch Paper Co. (500,000 lbs. only) 9.90c

No. 40—100,000 lbs., 25x38—140; flat, cut 32x42, 38x48, 39x50 and 41x52 ins.; the grain to run lengthwise of the sheet.

Consilidated Water Power & Paper Co. 9.96c

Chemical Wood Mimeographed, White and Colored

No. 45—500,000 lbs., white, No. 40; flat, cut 28½x34½, 32½x42½ and 38x48½ ins.; the grain: size 28½x34½ to run the 28½ in. way; size 32½x42½ to run the 42½ inch way; size 38x48½ to run the 38 inch way.

Barton, Duer & Koch Paper Co.. 8.15c
R. P. Andrews Paper Co. (200,000 lbs. only) 8.15c

No. 46—250,000 lbs., blue, buff, green, pink and yellow, No. 40; flat, cut 32½ x42½ and 38x48½ ins. Grains: Size 32½x42½ to run the 42½ in. way; size 38x48½ to run the 38 in. way. Min. order, one color, 10,000 lbs.

25% Mimeograph

No. 47—800,000 lbs., No. 40; flat, cut 28½x34½, 32½x42½, 34½x44, 38x48½ and 40½x42½ ins.; the grain: size 28½x34½ to run the 28½ in. way; size 32½x42½ to run the 42½ in. way; size 38x48½ to run the 38 in. way and size 40½x42½ to run the 42½ in. way.

Aetna Paper Co. (200,000 lbs. only 11.05c
R. P. Andrews Paper Co. (50,000 lbs. only—Price prevailing at time of shipment) 15.15c
Bulkley Dunton & Co. (Yellow only —Price prevailing at time of shipment) 15.15c
Messinger Paper Co. (50,000 lbs. only—Price prevailing at time of shipment) 15.15c

Duplicator Copy Paper, Liquid Process, White and Colored

No. 48—600,000 lbs., white, No. 40; flat, cut 32x42 and 34x44 ins.; grain to run lengthwise of the sheet.

Blue U S. M. O Safety Writing

No. 50—250,000 lbs., No. 32; rolls, 22 ins. wide, 24 ins. in diameter (3-inch fiber cores).

D. L. Ward Co. (Yellow only—Price prevailing at time of shipment) 14.28c

Chemical Wood Writing, White and Colored

No. 52—250,000 lbs., white, No. 26, flat, cut any size, min. width 21 ins., max. width 48 ins.

D. L. Ward Co. (Price prevailing at time of shipment) 12.65c

No. 53—5,000,000 lbs., white, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.

Whitaker Paper Co. 9.02c
D. L. Ward Co. (500,000 lbs. only —Price prevailing at time of shipment) 10.28c
R. P. Andrews Paper Co. (200,000 lbs. only) 9.02c
Cauthorne Paper Co. (Price prevailing at time of shipment—200,000 lbs. only) .....

No. 54—5,000,000 lbs., white, No. 40, flat, cut any size, min. width 21 ins., max. width 48 ins.

No. 55—1,000,000 lbs., white, No. 32; rolls, min. width 16 ins., max. width, 48 ins. (3-inch fiber cores).

Stanford Paper Co. (Ceiling price)
R. P. Andrews Paper Co. (450,000 lbs. only) 8.00c

No. 56—100,000 lbs., white No. 40; rolls, min. width 16 ins., max. width 48 ins. (3-inch fiber cores).

Mead Sales Co. 7.43c

No. 57—100,000 lbs., blue, buff, green, pink, salmon, and yellow, No. 26; flat, cut any size, min. width 21 ins., max. width 48 ins.

No. 58—1,000,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, Nos. 32 and 40; flat, cut any size, min. width 21 ins., max. width 48 ins. Min. order, one color, 10,000 lbs.

No. 59—100,000 lbs., blue, buff, green, pink, salmon, and yellow, No. 32; rolls, 38 inch. (3-inch fiber cores).

Stanford Paper Co. (Yellow only) 9.20c

Chemical Wood Writing (Titanium Dioxide Filled)

No. 61—1,000,000 lbs., No. 32; flat, cut 34x44 ins.

Barton, Duer & Koch Paper Co. (400,000 lbs. only) 9.99c

High Wet Strength Map

No. 63—70,000 lbs., No. 48; flat, cut any size, min. width 22 ins., max. width 48 ins. The grain to run lengthwise of the sheet.

Stanford Paper Co. 15.10c

50% Lithograph-Finish Map

No. 64—100,000 lbs., Nos. 32 and 40; flat, cut any size, min. width 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.

Franklin Research Co. (Ceiling price at time of shipment) 18.65c

No. 65—80,000 lbs., Nos. 48 and 56; flat, cut any size, min. width 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.

Franklin Research Co. (Ceiling price at time of shipment) 18.65c

Chemical Wood Manifold, White and Colored

No. 73—100,000 lbs., blue, buff, cherry, green, pink, salmon and yellow. No. 18; flat, cut 28x34, 32x42, and 34x44 ins. Min. order, one color, 5,000 lbs.

Graham Paper Co. (Cherry and Salmon to be regular standard colors) 15.00c

50% Manifold White and Colored

No. 75—40,000 lbs., No. 14; flat, cut 38x48 ins. Min. order 5,000 lbs.

No. 76—100,000 lbs.; white, No. 18; flat, cut 21x32, 28x34, 32x42, and 34x 44 ins.

R. P. Andrews Paper Co. (50,000 lbs. only) 28.00c
Paper Corp. of U. S. (OPA ceiling price; if no OPA ceiling price prevailing at time of shipment) .. 23.30c

No. 78—100,000 lbs., blue, buff, cherry, green, pink, salmon and yellow. No. 18; flat, cut 28x34, and 34x44 ins. Min. order, one color, 5,000 lbs.

R. P. Andrews Paper Co. (50,000 lbs. only) 29.00c
Paper Corp. of U. S. (OPA ceiling price; if no OPA ceiling price prevailing at time of shipment) ... 27.50c

Chemical Wood Bond, White and Colored

No. 102—400,000 lbs., white, No. 40; flat, cut any size, min. width 21 ins.; max. width 38 ins.

No. 103—300,000 lbs., blue, No. 32; flat, cut 32x42 ins.

25% Bond, White and Colored

No. 105—350,000 lbs., white, No. 26; flat, cut any size, min. width 21 ins.; max. width 48 ins.

Aetna Paper Co. 18.67c
Barton, Duer & Koch Paper Co. (150,000 lbs. only—size 21x32) .. 18.98c

No. 106—50,000 lbs., white, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.

Aetna Paper Co. 15.37c
Barton, Duer & Koch Paper Co. (Size 21x32 only) 15.42c

No. 107—50,000 lbs., No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.

Aetna Paper Co. 15.37c
Wilcox-WalterFurlong Paper Co. (OPA ceiling price at time of shipment) 15.23c

No. 108—50,000 lbs., No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.

Whitaker Paper Co. (50,000 lbs. only) 15.423c
Aetna Paper Co. 15.37c
Cauthorne Paper Co. (50,000 lbs. only—OPA ceiling price at time of shipment) 15.423c

No. 109—1,250,000 lbs., No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.

Aetna Paper Co. (500,000 lbs. only) 14.42c

No. 113—500,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.

Aetna Paper Co. 16.07c

No. 114—40,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 40; flat, cut any size, min. width 21 ins., max. width 48 ins.

100% White Bond

No. 128—50,000 lbs., Nos. 32 and 40; flat, cut any size, min. width 16 ins., max. with 38 ins. Min. order, one substance, 2,000 lbs.

Barton, Duer & Koch Paper Co. .. 28.20c

Chemical Wood White Ledger

No. 150—150,000 lbs., No. 48; flat, cut any size, min. width 17 ins., max. width 48 ins.

D. L. Ward Co. (Prices prevailing at time of shipment) 10.57c

No. 153—80,000 lbs., No. 88; flat, cut any size, min. width 17 ins., max. width 48 ins.

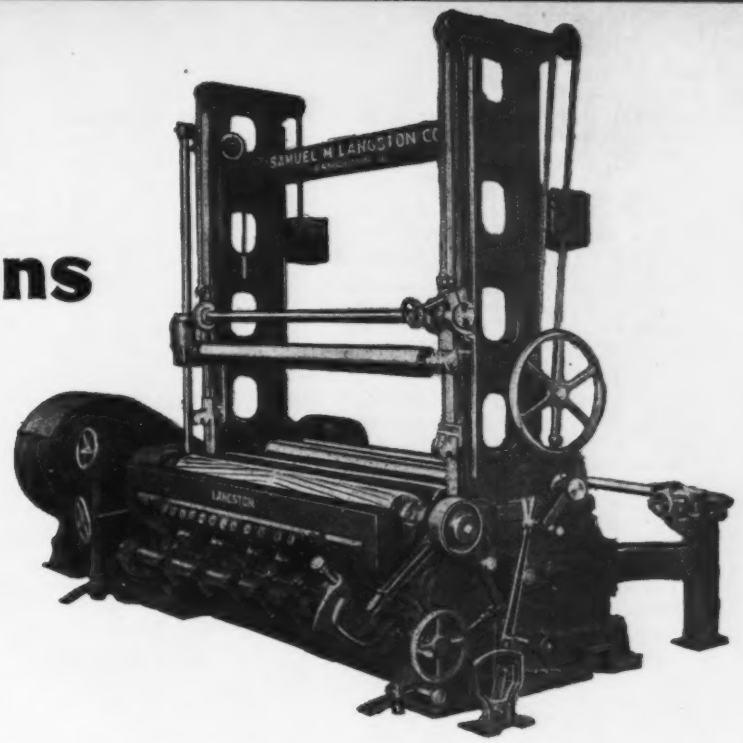
25% Ledger, White and Colored

No. 154—400,000 lbs., No. 48; flat, cut 28x34, 32x42, 34x44 and 38x48 ins. Min. order, one substance, 5,000 lbs.

Aetna Paper Co. 15.37

No. 155—300,000 lbs., No. 64; flat,

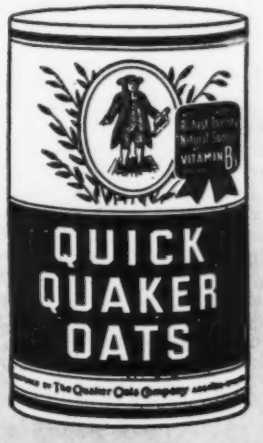
Successful Combinations



On the breakfast tables of America, "oatmeal-and-cream" has always been a popular team. The familiar Quaker Oats package that brings you this wholesome food is made with the help of a Langston "BA" Slitter and Roll Winder. Noted for the excellence of their products, The Quaker Oats Company, Chicago, find that Langston Slitters fully meet their exacting standards in the production of the package.

Wherever paper is processed; in the Mill, the Finishing Room, or the Converting Plant—Langston Slitters and Roll Winders assure dependable, trouble-free service.

SAMUEL M. LANGSTON COMPANY
CAMDEN, N. J.



Langston

SLITTERS AND ROLL WINDERS

cut 28x34, 32x42, 34x44 and 38x48 ins. Min. order, 5,000 lbs.

No. 156—300,00 lbs., white, No. 88; flat, cut 28x34, 32x42, 34x44 and 38x48 ins. Min. order, 5,000 lbs.

No. 157—100,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 64; flat, cut 34x44 ins. Min. order, one substance, one color, 5,000 lbs.

No. 158 — 150,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 88; flat, cut 34x44 ins. Min. order, one substance, one color, 5,000 lbs.

100% White Ledger

No. 176—15,000 lbs., No. 48; flat, cut 28x34, 32x42, and 34x44 ins. Min. order, 4,000 lbs.

Barton, Duer & Koch Paper Co. .. 29.00c

No. 177—20,000 lbs., No. 64; flat, cut 28x34, 32x42, and 34x44 ins. Min. order, 5,000 lbs.

Barton, Duer & Koch Paper Co. .. 29.00c

No. 178—40,000 lbs., No. 88; flat, cut 34x44 ins. Min. order, 5,000 lbs.

Barton, Duer & Koch Paper Co. .. 29.00c

Chemical Wood White and Colored Index

No. 183—750,000 lbs., white, 25½x30½—220 and 280; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets. Min. order, one weight, 10,000 lbs.

Whitaker Paper Co. 8.65c

No. 184—50,000 lbs., 25½x30½—340; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets. Min. order, 10,000 lbs.

No. 185—150,000 lbs., 25½x30½—220 and 280; flat, cut 32x42 ins., with projecting colored-paper marker between each 100 sheets.

50% Index, White and Colored

No. 189—250,000 lbs., white, 25½x30½—220 and 280; flat, cut 32x42 and 34x44 ins., with projecting colored-paper marker between each 100 sheets. Min. order, one weight, 10,000 lbs.

Aetna Paper Co. (100,000 lbs. only of 220 lbs. basis) 16.78c

No. 191—500,000 lbs., blue, buff, cherry, fawn, green, pink, salmon, and yellow; 25½x30½—220 and 280; flat, cut 34x44 ins., with projecting colored-paper marker between each 100 sheets. Min. order, one color, one weight, 5,000 lbs.

Barton, Duer & Koch Paper Co. (100,000 lbs. only—50,000 lbs. each in any two colors) 17.51c

100% White Index

No. 196—120,000 lbs., 25½x30½—250; flat, cut 20½x30½ ins.

Barton, Duer & Koch Paper Co. (All colors except white) 27.35c

Antique-Finish Cover, White and Colored

No. 203—200,000 lbs., 20x26—100; antique, white, blue, buff, dawn, quaker drab, terra cotta, gray, brown, green, gobelin blue, granite, tea and yellow; flat, cut 25¼x39, with projecting colored-paper marker between each 500 sheets. Min. order, one color, 5,000 lbs.

Whitaker Paper Co. (All colors except white) 10.05c

50% Laid Cover, Colored

No. 206—50,000 lbs., blue, cream white, gray and green, 20x26—130 and 200; flat, cut 25¼x39 and 28x41 ins., with projecting colored-paper marker between each 500 sheets. Min. order, one color, 2,000 lbs.

Wood Manila

No. 208—100,000 lbs., 24x36—80 and 100; flat, cut 25x38, 32x42 ins., with projecting colored-paper marker between each 500 sheets.

No. 209—50,000 lbs., 24x36—80 and 100; rolls, 21 ins. wide (3-inch fiber cores).

Chemical Wood Manila

No. 211—50,000 lbs., 24x36—140 and 160; flat, cut any size. Min. order, one weight, 5,000 lbs.

No. 2 Kraft

No. 217—50,000 lbs., 24x36—80 to 160; flat, cut any size, in wrapped bundles.

No. 218—50,000 lbs., 24x36—80 to 160; cut any size, folded (25 sheets per fold), in wrapped bundles.

No. 219—50,000 lbs., 24x36—80 to 160; rolls, min. width 9 ins., max. width 48 ins., wound on wooden plugs, 1½-inch hole, or on 3-inch fiber cores as may be specified.

White Gummed

No. 252—50,000 sheets; flat, 22x34 ins. Min. order, 25,000 sheets.

Stanford Paper Co. (Per M sheets) $17.00
Barton, Duer & Koch Paper Co. $17.00

Desk Blotting, Colored

No. 255—100,000 lbs.; moss green; flat 19x24—200, in wrapped bundles. Min. order 5,000 lbs.

Whitaker Paper Co. 9.50c
Stanford Paper Co. (less than 10,000 pounds) 10.50c
(Shipments 10,000 lbs. or over) .. 10.00c
(Shipments 100,000 lbs.) 9.50c
Barton, Duer & Koch Paper Co. .. 9.50c
D. L. Ward Co. (Price prevailing at time of shipment) 9.50c
Cauthorne Paper Co. (Price prevailing at time of shipment) 9.50c
Central Ohio Paper Co. (All at one time) 9.50c
(10,000 lbs. shipment) 10.00c
(Less than 10,000 lbs.) 10.50c

High-Finish Chemical Wood Manila Tag

No. 271—40,000 lbs., 24x36—280; flat, cut any size, min. width, 24 ins., max. width, 38 ins.

Paper Corp. of U. S. (OPA ceiling price; if no OPA price prevailing at time of shipment) 9.50c

Jute Tag

No. 280—100,000 lbs., 22½x28½—200 and 280; flat, cut 34x44 ins. Min. order, one weight, 10,000 lbs.

Paper Corp. of U. S. (OPA ceiling price; if no OPA ceiling price prevailing at time of shipment) 13.05c
(OPA ceiling price; if no OPA ceiling price prevailing at time of shipment) 12.30c

Railroad Board, White and Colored

No. 304—5,000 sheets, ash gray, green, orange and red, flat, 22x34 ins., 4-ply, each 100 sheets fully banded. Min. order, one color, 5,000 sheets.

Wood Cardboard, Colored

No. 306—100,000 lbs., buff; 22½x28½—150; rolls, 20 ins. wide (6-inch iron cores).

No. 307—100,000 lbs., buff, 22½x28½—150; flat, cut 32x42 ins.

No. 309—40,000 lbs., blue, buff, gray, green, melon, pink and yellow; 22½x28½—184; rolls, 20 inches wide (6-inch iron cores).

Chemical Wood Tan Board

No. 310—40,000 lbs., 22½x28½—200; flat, cut 19½x28½, 25x38 and 34x44 ins.

R. P. Andrews Paper Co. (Price prevailing at time of shipment) .. 10.46c
Paper Corp. of U. S. (OPA ciiling price; if no OPA ceiling price prevailing at time of shipment) 11.05c

United States Postal Card Paper

No. 325—2,500,000 lbs., 22½x28½—188; rolls, 33 ins. wide, 36 ins. in diameter and 33 ins. wide, 36 ins. in diameter (6-inch iron cores).

Whitaker Paper Co. 6.77c
R. P. Andrews Paper Co. (Total tonnage 1,500,000 lb. lots 325, 326 and 327) 6.70c

No. 326—2,500,000 lbs., 22½x28½—188; rolls, 33 ins. wide, 36 ins. in diameter (6-inch iron cores).

Whitaker Paper Co. 6.77c
R. P. Andrews Paper Co. (Total tonnage 1,500,000 lb. lots 325, 326 and 327) 6.70c

No. 327—2,500,000 lbs., 22½x28½—188; rolls, 33 ins. wide and 36 ins. in diameter (6-inch iron cores).

Whitaker Paper Co. 6.77c
R. P. Andrews Paper Co. (Total tonnage 1,500,000 lb. lots 325, 326 and 327) 6.70c

Postcard Paper

No. 330—500,000 lbs., 22½x28½—188; flat, cut 33x56 ins.

No. 331—500,000 lbs., 22½x28½—188; rolls, 22 ins. wide, 30 ins. in diameter (6-inch iron cores).

Pressboard, Colored

No. 351—30,000 sheets; flat, cut 30x36, thickness .0140 in. Min. order, 5,000 sheets.

R. P. Andrews Paper Co. (Per C sheets) $10.38

Binder's Board, No. 1 Quality

No. 366—100,000 lbs.; flat, to trim 25x30 ins., No. 16, 18, 20, 25, 30 and 40.

No. 367—20,000 lbs., 25¾x30¾ ins., Nos. 12 and 20; flat, to trim 34x44 ins.

Binder's Board, Best Quality

No. 368—20,000 lbs.; flat, to trim 20x30 ins. and 22x28 ins., Nos. 18, 20, 25, 30, 35, 40, and 45. Min. order, 5,000 lbs.

Consolidated Paper Co. 6.722c

Chestnut Cover Board

No. 369—100,000 lbs.; flat, to trim 25x30 ins., Nos. 17, 19, 21, 25, 31 and 41.

Mead Sales Co. (.060 and up caliber) 4.40c
(caliber 0.50) 4.775c

OBITUARY

Fred W. Genrich

WAUSAU, Wis.—Fred W. Genrich, 74, an attorney closely associated with the growth and development of Wausau for nearly half a century and prominent in the development of the Wisconsin river valley area, died Sunday, September 8, at a local hospital, after an illness of two weeks. He was particularly interested in water development and was secretary-treasurer and attorney for the Wisconsin Valley Improvement Company. Funeral services were held here Wednesday, September 11.

BRAMMER RECORDING CONSISTENCY CONTROL

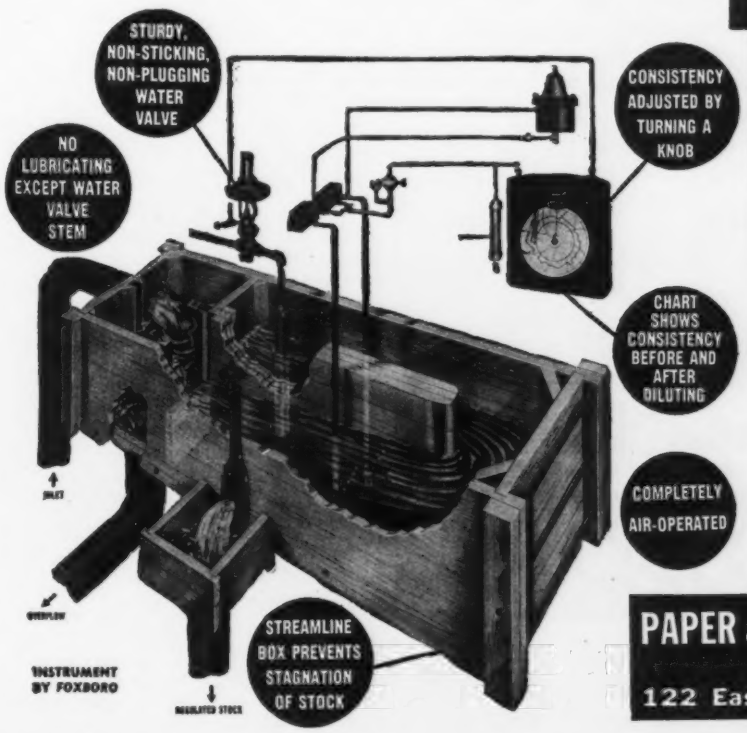
Accurately controls consistency at almost any desired point in the stock system

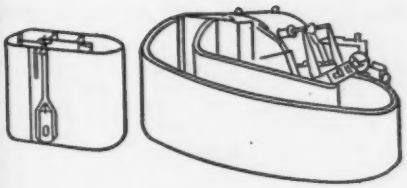
The Brammer is applied in various ways depending on the process and the results desired: ahead of the machine as an adjunct to the stuff box to insure uniform weight and caliper of product; ahead of finishing beaters or Jordans to deliver uniform consistency stock and thereby secure more uniform treatment; or ahead of bleachers, screens, washers, or thickeners for more uniform results in these steps.

The Brammer Control is guaranteed to maintain consistency within plus or minus 1/10 of 1% provided stock is delivered to the control box at consistencies between 2 and 6%.

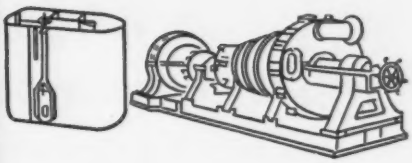
Licensed under U. S. Patent Numbers: 1,810,111; 1,844,075; 2,302,326; 2,302,327.

Catalog upon request

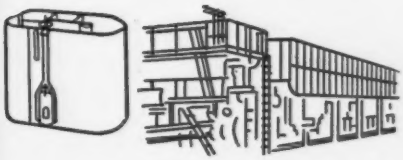

STURDY, NON-STICKING, NON-PLUGGING WATER VALVE
NO LUBRICATING EXCEPT WATER VALVE STEM
CONSISTENCY ADJUSTED BY TURNING A KNOB
CHART SHOWS CONSISTENCY BEFORE AND AFTER DILUTING
COMPLETELY AIR-OPERATED
STREAMLINE BOX PREVENTS STAGNATION OF STOCK
INSTRUMENT BY FOXBORO



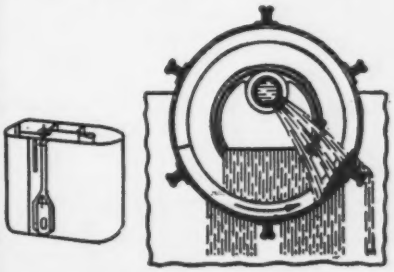
BEFORE BEATERS



BEFORE JORDANS



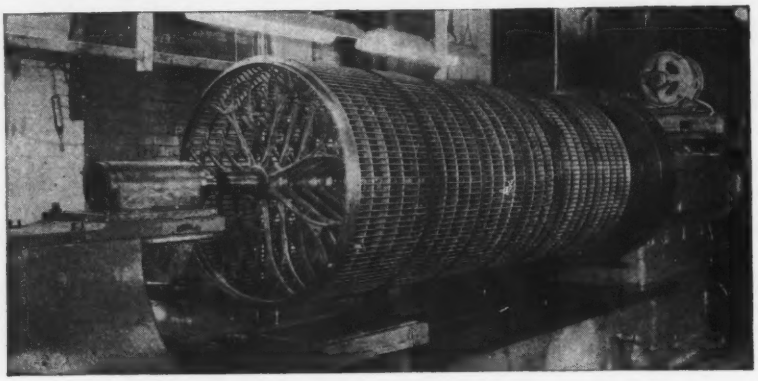
BEFORE PAPER MACHINES



BEFORE KNOTTERS

PAPER and INDUSTRIAL APPLIANCES
Incorporated
122 East 42nd Street, New York, N. Y.

TO SERVE YOU..



More Precision Machinery

Huge motor-driven lathes, such as the one above, capable of handling the largest cylinder moulds . . . borers . . . radial drills . . . millers—these are just some of the modern precision equipment that Cheney Bigelow has added during the past several years to serve you better and faster.

Not only have we acquired new equipment, but more factory space as well. This additional space insures freedom of action for our workmen, thereby speeding operations.

New equipment and more space are but two phases of our new program to be of greater service to the paper industry. We have also added top-flight personnel to our engineering staff—men with a thorough understanding of the industry and its problems. Through their efforts, we have been able to make great progress in our design and experimental work, progress which has enabled us to reach the point where we will soon be able to announce new products of unusual interest to you.

Our one aim is to be more helpful. We are prepared to serve you promptly and efficiently.

MORE FACTORY SPACE MORE ENGINEERS NEW PRODUCTS

CHENEY BIGELOW

Fourdrinier Wires • • Dandys • • Cylinders • • Wire Cloth

CHENEY BIGELOW WIRE WORKS · 417 LIBERTY STREET · SPRINGFIELD, MASS.

Westinghouse Shows Its Life-Line Motor

A new series of alternating-current motors, known as the Life-Line made its appearance last week. The series which represents a distinct advance above the normal rate of progress, is more than 35 percent smaller in size than its predecessor. It was shown to a group of engineers by the Westinghouse Electric Corporation. The reduced size has been accomplished without sacrifice of electrical properties. Starting torques have been increased as much as 134 percent per lb. of motor and maximum torques increased as much as 116 percent per lb. of motor. High efficiencies and power factors are maintained. The appearance is much improved and maintenance requirements are materially decreased. Specifically the bearings will need no attention for at least five years. Shock resistance is increased many-fold. Vibration and noise have been reduced to new low limits. Fewer insulation burnouts will be experienced because of new features in insulating materials and improved winding techniques.

The use of steel instead of the more conventional cast iron makes this motor stronger. The structural steel sections are as thick as they would be if made from cast iron.

The finish coating will consist of base coats of baked thermoset varnish with a final coat of lacquer. Tests and experience have demonstrated that steel with this finish is adequately corrosion resistant for general application. In some extremely severe applications, such as in chemical plants, stainless steel will be used for shields and hoods.

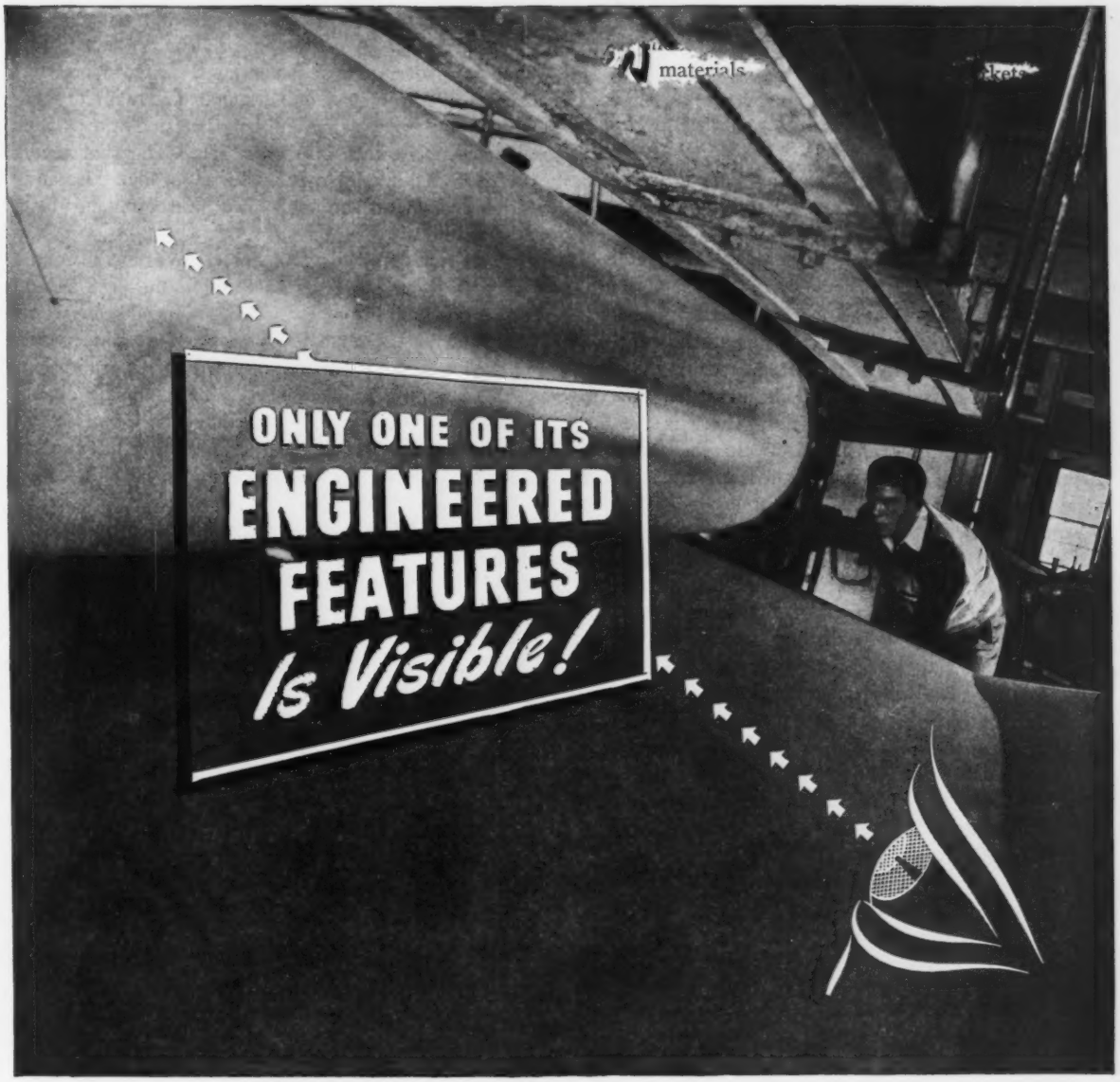
Size is also reduced by an improved engineered cooling system. Much more air passes through this motor than through its predecessor, thus permitting the reduction in size of the cooling surfaces.

Sears Ltd. Takes Lawson Line For Canadian Distribution

NEW YORK—E. P. Lawson Company, has appointed Sears, Limited, as sole distributors in Canada of the new Lawson line of Paper Cutters, Multiple Head Drill Slotters, and Multiple Head Round Hole Drilling Machines. Sears has warehouses, sales and service organizations located at Toronto, Montreal, Winnipeg and Vancouver. Installations and service on Lawson Cutters, Drill Slotters, and Round Hole Drilling Machines will be maintained by Sears throughout the whole Dominion of Canada and Newfoundland.

Heppenstall Moves in Philadelphia

PHILADELPHIA — Heppenstall Company, Pittsburgh, has moved its local office from the Drexel Building to Room 1446, The Broad Street Station Building, Philadelphia 3.



The flawless, gleaming surface of this synthetic rubber press roll is indicative of the technical skill with which every U.S. Rubber roll is fabricated. Beneath this polished finish are all the properties requisite to maximum efficiency and service. You'll find that U.S. Rubber Paper Mill Rolls have all the characteristics you're seeking:

1. *Proper and uniform density*
2. *Maximum resiliency*
3. *Low drift*
4. *Exceptional core adhesion*
5. *Highly polished surface*
6. *Excellent grinding properties*

UNITED STATES RUBBER COMPANY

SERVING THROUGH SCIENCE

1230 SIXTH AVENUE • ROCKEFELLER CENTER • NEW YORK 20, NEW YORK

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

W. L. Cook, Editor

Amen and Amen

The degree of fervency with which an Amen may be pronounced may vary according to the degree of emotion in the being of the pronouncer or the severity of the stress under which he has been suffering and from which he seeks relief. There is the deep Amen, familiar from its description as the sound produced by a chance-struck chord of music. There is the piercing Amen of those under heavy mental strain. There is the loud strong firm Amen that indicates the most positive degree of agreement among strong men who feel that they are in utter accord, that they have had enough of something wrong and that they back up with all their force the words of one who has put their thoughts ito words.

That tone, and all that it implies, perhaps was to be noted in the echoes that rose after a meeting at the Department of Commerce in which an executive of that branch had declared that Government controls must be eliminated, and soon. "At the earliest possible moment," was the phrase used.

The meeting was a gathering of representatives of some two hundred men, representing national retail trade associations. The speaker was Alfred Schindler, Undersecretary of the Department. His message was that Government controls must go at the earliest possible moment.

"We can't go on indefinitely with an economy half free enterprise and half controlled," the Undersecretary said. "History should have taught us that." Some controls are necessary temporarily, however, he explained.

Mr. Schindler expressed concern over the country's shortage of trained salesmen, and told the businessmen they should help train and reorient young veterans who want to go into business.

Nelson A. Miller, chief of the Department's marketing division, reported sales of retail stores in the first seven months of 1946 were at the annual rate of $93 billion, "the largest in the nation's history."

Dollar volume is now at a rate more than double the 1939 level, with two-thirds of the sales increase occurring since Pearl Harbor, he said. Price rises accounted for about two-thirds of the 1936-46 sales increases, however, Mr. Miller explained. He termed this "a sobering and realistic factor in any analysis of the extremely high present dollar volume of retail trade."

Paper products are still far behind demand the Department finds. Wrapping, printing, tissue and fine papers, grocery bags, paper cups, boxed facial tissues—all are in inadequate supply and will continue to be, until "new paper and board capacity now under construction comes into operation." The shortage is largely attributed by Mr. Miller to new demands from customers who found new uses for paper bags during the war.

This matter of Government control, in the minds of many who have passed through the past decade and a half, can produce, and has produced some weird contradictions. Only a few weeks ago Alexander Calder, president of Union Bag and Paper Corporation, was reminding an audience of the complete about-face that industry and trade have been put to by Government edict, and he was not citing the experience as a result of any political upheaval either.

"During NRA days," he reminded his audience, when we were supposed to publish our prices, we could not sell our product for less without violating the Federal Law. In many industries, however, certain manufacturers found a way—through rebates or other means—to cut prices and sell below their published prices. Many manufacturers who adhered to their published prices lost a great deal of business because of this practice. Fortunately, the NRA was declared un-Constitutional before they were obliged to violate the law or lose all of their business.

"Today under OPA we have learned that prices can go both below and above ceilings. In other words, where prices are concerned, the law of supply and demand is far more effective than any Federal Laws.

The United States is by far the largest consumer, producer and importer of paper in the world. Keeping in mind the fact that paper consumption is a yardstick of civilization and standard of living, it is interesting to note that the per capita consumption of paper in the U. S. is more than three hundred pounds. If we leave out the United States, the per capita consumption of the rest of the world is only about twenty pounds.

Calendar of Coming Events

September 20-21, 1946—Annual Meeting Southern Paper Trade Association. Hotel Buena Vista, Biloxi, Miss.

September 26-28, 1946—TAPPI General Fall Meeting. Hotel Statler, Detroit, Mich.

October 2-4, 1946—TAPPI Engineering Conference. Pfister Hotel, Milwaukee, Wis.

October 14-16, 1946—TAPPI Alkaline Pulping Meeting. Roosevelt Hotel, New Orleans, La.

October 17-19, 1946—National Paper Trade Association, Fall Convention, Edgewater Beach Hotel, Chicago, Ill.

The paper industry, Mr. Calder went on, with sales today of more than 2 billion dollars a year, is far more important than indicated by its rating as number six in size in relation to the other essential industries. Of course, food shelter and clothing rank higher in relative importance, yet it is inconceivable that modern civilization could carry on without paper. The industry is heterogeneous in character with individual concerns differing in their products, markets and manufacturing processes as though they were engaged in different industries. In 1945 nearly one-half of the total output of the industry consisted of paperboard, with wrapping and bag paper second in importance, and book paper third. These three divisions made up about three quarters of the total output. The other quarter is made up of newsprint, magazine paper, special tissues, etc.

Since 1941 the total output of paper and paperboard has not increased while industrial production gained almost fifty percent. If the production of paper and paperboard in 1942 and 1943, for example, had been permitted to rise in line with increasing industrial activity, the industry in 1943 might have turned out more than 20,000,000 tons of paper and paperboard instead of 16½ million tons.

The restricted wartime output—all of which was "government allocated" on the basis of its end-use essentiality—should mean that postwar paper production will maintain a high level even in the fact of a sharp curtailment in general manufacturing activity. This is particularly true because wartime use of paper expanded into many fields formerly dominated by other materials. Some of the new markets will be lost, but quite a number should prove to be permanent.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1946		Corresponding Weeks—1945	
August 3	105.2	August 4	93.6
August 10	103.4	August 11	93.0
August 17	104.5	August 18	67.8
August 24	106.1	August 25	95.4
August 31	105.6	September 1	95.2
September 7	*86.7*	September 8	75.9

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1945	86.7	89.4	90.2	88.1	89.8	91.2	80.8	88.6	90.2	95.9	95.5	91.0	89.7
1946	94.7	98.4	104.4	102.7	100.7	104.6	94.0	*104.7*					

COMPARATIVE YEARLY SUMMARIES

	1939	1940	1941	1942	1943	1944	1945	1946
Year to Date	78.8	86.2	94.5	92.6	87.9	87.5	87.7	*99.8*
Year Average	83.4	85.6	97.4	90.4	87.8	88.1	89.7	

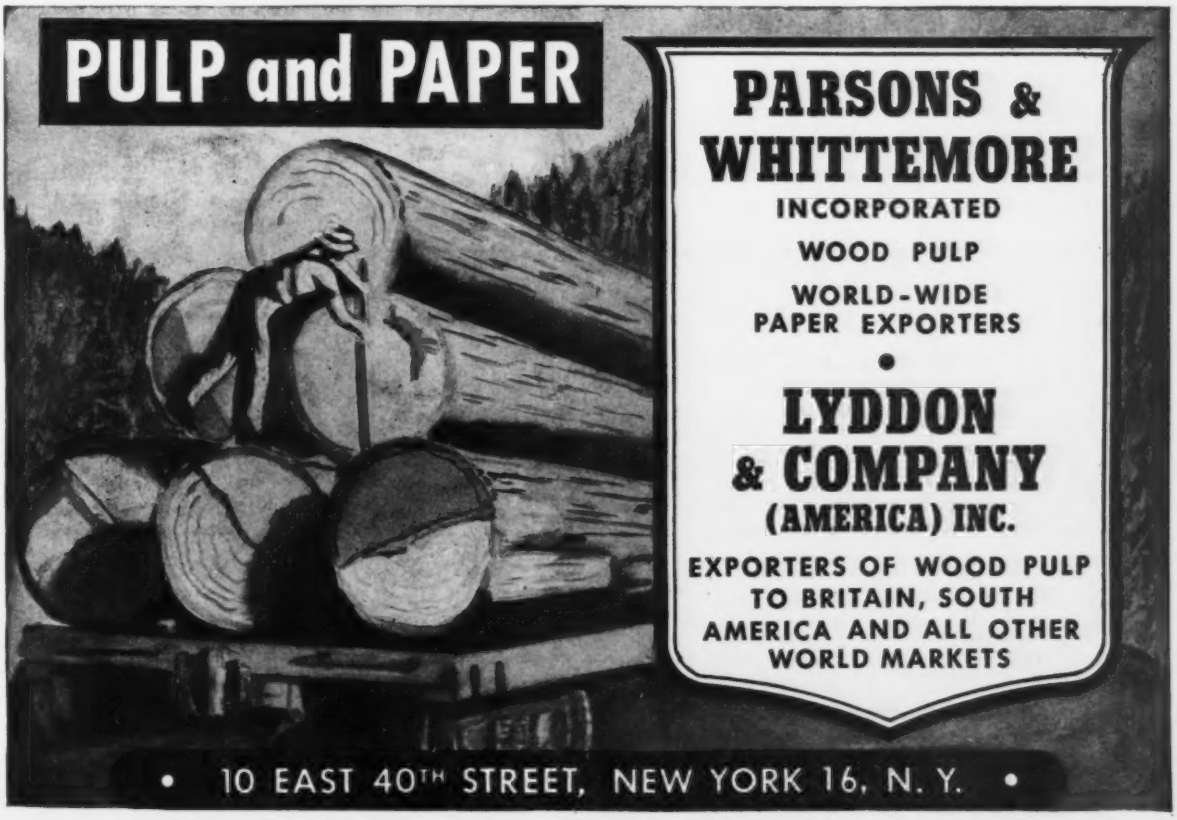
PAPERBOARD OPERATING RATIOS†

Current Weeks—1946		Corresponding Weeks—1945	
August 3	98	August 4	94
August 10	96	August 11	94
August 17	98	August 18	67
August 24	100	August 25	99
August 31	100	September 1	97
September 7	*83*	September 8	80

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1945	91	95	97	97	96	96	86	90	91	97	95	85	93
1946	90	97	100	99	94	97	89	*99*					

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.



putting termites out of your business

For reliable protection against destroying organisms, the lumber and woodworking industries—like many other enterprises—have found true effectiveness in Dowicide.

When saws transform trees into lumber, wood destruction starts. It can be prevented by Dowicide 7 (Dow Pentachlorphenol), a tested preservative that forestalls damage by mold, decay and termites.

Pentachlorphenol is only very slightly soluble in water and its volatility is extremely low. Hence it affords protection that lasts. And it is highly toxic to practically all fungi, bacteria and other microorganisms. Yet wood treated with pentachlorphenol is clean and paintable, nonbleeding, easily handled.

Dow is prepared to supply pentachlorphenol in quantity and counsel you on its use. Try pentachlorphenol for wood preservation—try Dowicides to halt destruction by organisms in any industry.

DOWICIDE
germicides and fungicides

control termites mold and bacteria

DOWICIDES IN THE PAPER INDUSTRY

In paper manufacturing, Dowicides have proved their wide usefulness in combatting destructive mold. Dowicides have been found to increase wet felt life as much as 60 per cent. They also aid in slime control, in preserving log and pulp stock, in making packaging papers mold-resistant and in reducing maintenance costs.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN
New York • Boston • Philadelphia • Washington • Cleveland • Detroit • Chicago
St. Louis • Houston • San Francisco • Los Angeles • Seattle

DOW
CHEMICALS INDISPENSABLE TO INDUSTRY AND AGRICULTURE

Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

TAPPI and the Strawboard Industry*

By R. G. Macdonald[1]

During the war a great amount of interest was created in the technology of packaging and containers. It has been difficult to keep up to date with all of the new organizations, some of a semitechnical nature that were established. It is doubtful if many will survive a number of years of existence. This is because of the everlasting and intensive effort that is necessary on the part of a few individuals to render a continuing service to justify their continued support.

Those that are most likely to survive are the larger, long organized and well financed societies such as the American Management Association, the Packaging Institute, the American Society for Testing Materials and the Technical Association of the Pulp and Paper Industry. The first two are primarily marketing organizations with strong corporate support. The A.S.T.M. is a large engineering society that deals with all engineering materials and can easily carry on relatively minor interests such as paper and container testing, and TAPPI, the pulp, paper, and paperboard's own technical association which has attained its present high prestige largely through continuous aggressive effort covering a period of more than thirty years. Its support by the industry has been hard earned and its accomplishments have been cumulative.

The Technical Association was established in 1915 as a section of the American Pulp and Paper Association. In the same year, however, it withdrew from the trade association and became an independent self-financed and self-administered organization. This change in policy was due to two factors. First, it was evident that the trade associtaion would not provide the aggressive leadership that was needed and second, it was felt that it should not be limited in scope to the branches of the industry represented by the parent organization. Relations with the American Paper and Pulp Association have been excellent over the years.

Organization of TAPPI

The Technical Association is an organization made up of individuals and companies. There are about 2400 individuals and about 290 companies. About half of the latter are pulp, paper, and paperboard manufacturers and the balance are equipment and commodity manufacturers and distributors. Through this type of organization nearly all the factors involved in advancing the progress of the industry are represented. The individual members are largely engineers, chemists, superintendents, and operating executives.

The main work of the Association is carried on by forty committees made up of individuals who are leaders in their particular activities and who are willing to give some attention to the professional work of the Association. Theodore Roosevelt once said that every professional man owes some time and interest to the improvement of his profession and industry.

The administration of the Association is carried on by an executive committee made up of fourteen elected individuals, including the president and vice president. The Secretary-Treasurer is employed by the Executive Committee on a full time basis and is responsible for carrying out the details relative to the Association's many ramifications.

The work of the Association is carried on through seven divisions made up of the aforementioned forty committees. These divisions include: Engineering, Testing, Pulp Manufacture, Paper Manufacture, Converting and Consuming, Industrial and Research Development. Each division is headed up by a general chairman who is generally a member of the executive committee and must report the progress made by his division each month. To report progress it is usually necessary for him to promote constant activity. The general activities of the committees are coordinated through the executive committee.

Another phase of TAPPI is its local section organization. There are eight chartered sections known as the Maine-New Hampshire, New England, Empire State, Delaware Valley, Ohio, Kalamazoo Valley, Lake States, and Pacific Sections. There are also a few organizations of a similar nature loosely affiliated with the Association. These sections are largely autonomous in character but receive financial support from the Technical Association. Their officers must be members of TAPPI but otherwise there are no rules established to govern their activities. Most of them hold monthly meetings and are gradually being encouraged to do work that will benefit the national organization. Each section has a national executive committeeman accredited to it in an official capacity. Their chairmen are invited to sit in at some of the meetings of Executive Committee and a subcommittee of the Executive Committee is devoting time to studying the local sections to improve their usefulness.

Because of the sections it may be said that there is a TAPPI meeting somewhere in the United States nearly every week in the year except during July and August. The national organization holds at least two major meetings each year, one in February and the

* Presented at the conference sponsored by the Fibrous Agricultural Residues Committee of the Technical Association of the Pulp and Paper Industry, Peoria, Ill., April 26, 1946.

[1] Secretary-Treasurer, Technical Association of the Pulp and Paper Industry, 122 E. 42nd Street, New York 17, N. Y.

others in the spring and fall. The present meeting is national in character and is sponsored by one of the national committees, the Fibrous Agricultural Residues Committee under the able leadership of Mr. Aronovsky and his associates.

This fall the TAPPI Alkaline Pulping and Chemical Products Committees will sponsor a national meeting at New Orleans and the entire newly reorganized Engineering Division will hold a three day meeting, probably at Milwaukee.

Relation to Strawboard

What has all this got to do with the strawboard industry? Here it is largely through committee organization that the relationship can be most clearly seen. You will note that our divisional organization is largely functional in character. We do not limit the scope of Mr. Aronovsky's committee to straw utilization. The name Fibrous Agricultural Residues includes that but also embraces the whole field of nonwoody fibers. Similarly we have a Structural Fibrous Materials Committee that includes mostly thick building boards, irrespective of the materials used.

Engineering principles are the same in all branches of industry. Recently, the Engineering Division of the Technical Association was reorganized to better serve the requirements of the engineers of the industry. It is expected to develop this division even to the extent of having it operate almost as an independent organization. This is found to be an advisable precedure since plant engineers seldom have an opportunity to get away from their mills when mill operating executives and technical men are away.

The new Engineering Division includes committees on Steam and Power, Mill Design and Economic Aspects, Heating and Ventilating, Mill Instrument Control, Water, Materials Handling, Engineering Research, and Mill Maintenance and Materials. The reception on the part of the engineers of the industry to this new organization has been enthusiastic.

The Association's Research Development Division has had a long record of success. In this division are included such committees as the Abstracts and Bibliography, Fundamental Research, Bacterial Control Methods, Patents and Plastic Committees. The work of the Abstracts and Bibliography Committee has been outstanding. The industry, through this committee is the only one that has a complete record of its manufacturing literature since 1900. This record enables research men to avoid duplication of work that has already been done. The other committees have done an excellent job in keeping the industry up to date on research developments of a fundamental nature. They have also kept the members close to the educational and public research institutions where such work is carried on.

Our Pulp Manufacture Division gives the Association an opportunity to bring together the men in the sulphite, kraft, groundwood, deinking, wallboard, bleaching, and chemical byproducts industries. These are almost associations within themselves. In fact, our Alkaline Pulping Committee will sponsor a three day meeting this fall in New Orleans. This will probably become an annual event.

Our Paper Manufacture Division is attempting to deal with the factors relating to stock preparation, fourdrinier and cylinder machine design and operation. Here again we are dealing with operations that are common to all branches of the industry.

Testing Methods

The most outstanding accomplishment of the Association has been its development of testing procedures. To properly evaluate any operation or a product it is necessary to establish reliable and reproducible means of measurement. The Association has been fortunate in having a large number of members who have been willing to give the time necessary to develop the large number of testing procedures that have been established as industry standards.

The Certificate of Achievement that was awarded to the Association this year by the Navy Department was in part a recognition of the time and effort saved, that would otherwise have had to be used by Army and Navy technologists in developing standards of probably much less reliability in preparing the tremendous number of specifications for paper, paperboard and packaging materials.

At least twelve committees are now working on new testing methods that will be of additional value to all branches of the industry. The detailed steps leading up to the recognition of a procedure as a standard involves much more effort than is generally appreciated. Sometimes, years of work are necessary to create an acceptable standard procedure.

The Converting and Consuming Division deals with the processing of finished paper and board. In this division are included the Coating, Containers and Graphic Arts Committees. The Coating Committee is at present working on the preparation of a series of monographs covering raw stock, plastics, adhesives, equipment, pigments, defoaming agents and control testing methods. This committee has been meeting every six weeks for several years in the Association's headquarters.

You will note that the committees of the Association enable the organization to do work in a large number of the branches and the functions of the industry. These are all wheels within wheels that can be coordinated like clockwork through the administrative system that has been gradually improved over the years. Professional association work is a business in itself and needs the same application of constant research study to improve its service that is needed by any other type of business or operation.

There is still another division known as the Industries Division, of which the Fibrous Agricultural Residues Committee is a part. In addition there are within this division our Fibrous Raw Materials, Nonfibrous Raw Material and our Vocational Training Committees. The raw materials committees deal largely with economic aspects of the raw materials of the industry.

The Fibrous Agricultural Residues Committee is one of our newer committees. It was organized to serve your part of the industry and has been successful from the start, due largely to the aggressive leadership of Mr. Aronovsky, the cooperation that he has received from your companies and the existence of the Northern Regional Research Laboratory which was established to advance the economic and technological position of the agrarian interests of this Country.

Here again we have almost an association within an association. The organization of the committee itself parallels that of the committee and divisional organization of the Association. This does not represent an overlapping of association functions. Rather, it supplements many of them. The work of the Association at large, dealing as it does with functional

matters advances technical knowledge, much of which can be used by this committee for specific application to the problems relating to fibrous agricultural residues, including straw.

Aside from its extensive publishing program the Association has, over the years, contributed much by bringing together men who have been seeking knowledge to improve their company's processes and products. The frequent meetings attended by these men have resulted in the establishment of personal friendships and a steady breaking down of barriers of manufacturing secrecy. Everyone has gained by this and as a result of knowledge gained have pressed forward to the new horizons that are always some distance ahead. There is still so much to be found out by everyone that even now if everyone knew what everyone else knows about the utilization of straws and their manufacture into useful products, the surface of knowledge would be only scratched. It is doubtful if any company in this branch of the industry owes much of its success to special information within its technical organization. Such success is more likely due to the skill with which management has been able to coordinate this knowledge with many other factors.

The industry can well afford to go all out in sharing its knowledge since in doing so it is only helping to fabricate a tool that can be used in advancing this industry. The skill of inventors in designing new machine tools probably never has been as important as the fundamental discoveries of superior alloys, understanding of metalography and the applications of electrochemical and electronic principles. In other words, do not give undue importance to the value of gadgets but cooperate in promoting knowledge of the basic fundamentals so that the industry itself will not only survive but will find an even more useful place in this Nation's economy and well being.

New England TAPPI Executive Committee Meets at Thompsonville

The Executive Committee of the New England Section met at the Mountain Laurel Inn, Thompsonville, Conn., on September 6th and organized the Section program for the coming year. The first meeting will be held at the Roger Smith Hotel, Holyoke, Mass., on October 18th.

Those present included: L. B. Tucker, Crane & Company, Chairman; Helen U. Kiely, American Writing Paper Company; Henry Mellen, Hercules Powder Company; W. L. Foote, B. F. Perkins & Sons; F. A. Strovink, American Cyanamid & Chemical Company; E. W. Strecker, Esleek Mfg. Company; George C. Schmid, Cellutin Corporation;; Lester B. Crouse, Penick & Ford Sales Company; R. H. Doughty and R. J. Proctor, Fitchburg Paper Company; C. F. Young, Rising Paper Company, P. P. Gooding, Strathmore Paper Company and R. G. Macdonald, Secretary TAPPI.

Lime Manufacture

Theory and Practice of Lime Manufacture has been published by Azbe Engineers, consulting lime specialists. (423 pp. 8½ x 11). This is a collection of articles printed in photo-offset by Victor J. Azbe covering the period 1923-1946. Mr. Azbe has probably studied this subject longer and written more articles on it than any other individual.

Although it deals with the theories that should be known to lime plant operators it is essentially a practical book covering the experiences of the author. Although it is not clear if the author has had experience with lime kilns in woodpulp plants his work for the lime industry has a direct application and emphasizes the greater care required in producing lime for direct sale.

A few of the subjects covered will illustrate the contents of the 166 articles contained in the book: Lime kiln thermal efficiency, Factors governing lime kiln capacity, Factors affecting life of kiln linings, Testing of lime kilns, Lime production methods, Refractories, Lime kiln chemical reactions, Lime solubility, Lime kiln heat balance, Saving with instruments, Efficiency of lime kilns, etc.

Copies may be obtained from the Technical Association of the Pulp and Paper Industry, 122 East 42nd Street, New York 17, N. Y., at $8.00 per copy.

TAPPI Notes

Donald Bradner, formerly of the Champion Paper and Fibre Company, is now a consultant in the Development Department of E. I. du Pont de Necomurs, Wilmington, Del.

J. R. Lientz, formerly of the Swenson Evaporator Company, is now superintendent of the Technical Service Department, Union Bag & Paper Company, Savannah, Ga.

Vernon L. Tipka, formerly of the Paper Corporation of America, is now Assistant Chief, Paper and Paperboard Branch, Forest Products Division, Civilian Production Administration, Washington 25, D. C.

Willard F. Schroeder of the Buffalo Electro-Chemical Company, has been transferred from Syracuse to the Research Department in Buffalo, N. Y.

Michael S. Shenk, formerly with the Certified Products Co., is now production manager and chief chemist for the Peerless Adhesive Co., 1125 W. Lake St., Chicago, Illinois.

TAPPI Standard T 220 m—Physical Testing of Pulp Handsheets: On the TAPPI Standard sheet machine made prior to 1947, the disk in the baffle immediately above the drainage pipe has been 1¼ in. diam. However, with the bore of the drainage pipe 1⅜ in. as standard in the United States it is desirable to increase the diameter of this disk to 1⅝ in. This may be done by soldering to the edges four quarter-circle pieces of flattened 3/32 in. diameter copper wire. This will eliminate the small, but detectable extra thickness of the center portions of test sheets made from free unbeaten pulp.

Error in TAPPI Standard T 426 m—40: At the end of the second paragraph under "Procedure," the figure 0.6 mm should read 0.6 cm or 6 mm.

Maine-New Hampshire TAPPI To Meet Nov. 8-9

The TAPPI Maine-New Hampshire Section will meet at the Eastland Hotel, Portland, Maine, on October 8-9, 1946. The Maine-Bowdoin football game will be played on the afternoon of November 9th. Members of the Eexecutive Committee who met on September 5th included E. L. Lamb, Oxford Paper Company, Chairman; G. A. Day, Brown Company; H. E. Pratt and W. E. Brawn, Pejepscot Paper Company; W. V. Torrey, S. D. Warren Company; John L. Parsons, Hollingsworth & Whitney Company; E. J. Ferrell, Fraser Companies, Ltd., J. F. Wright, National Aniline Division and Roy P. Whitney, University of Maine.

The Production of Wood Sugar in Germany and Its Conversion to Yeast and Alcohol*

By Jerome F. Saeman[1], Edward G. Locke[2], G. K. Dickerman[3]

Abstract

The production and utilization of wood sugar played a small but significant part in the German war economy. Plants producing alcohol by the Scholler process, and from sulphite liquor, had capacities totalling 10,000,000 liters and 25,000,000 liters per year, respectively. The total capacity of plants for the production of yeast from wood sugar of all sources was in excess of 25,000 metric tons per year. Additional plants for the production of yeast from sulphite liquor were under construction at the end of hostilities.

Nearly all sulphite liquor in Germany was used to produce yeast or alcohol. The production of food year from sulphite liquor, except for one small unit at the I. G. Farben Plant at Wolfen makes use of the Waldhof system. This process is continuous, requires about 4.5 hours, and makes use of mechanical-aeration and foam-breaking equipment. The over-all plant yield in this process has been 40% based on the reducing-sugar content of the sulphite liquor. Liquor from beech or spruce is equally satisfactory. The Waldhof process has been in use for over 4 years, was soundly engineered, and of all existing processes seems to offer the greatest hope for the solution of the problem of sulphite liquor utilization. Engineering data and blueprints of the necessary equipment are available for this process. The technique may prove useful in other industrial aerobic fermentations, such as bakers yeast or penicillin production.

Other less widely used fermentations for the production of yeast, such as the I. G. Farben-Scholler method, and the Vogelbusch method, are described.

Contrary to widely published reports, the Scholler process for wood hydrolysis was not greatly expanded during the war. There has been no significant progress in the technique of sugar production, but the fermentation of wood sugar to alcohol in Scholler plants is carried out with Torula utilis *by a rapid continuous yeast reuse method requiring as little as 5 hours. Such rapid fermentations, however, were not used in the alcoholic fermentation of sulphite liquor.*

The pentose-containing still bottoms from one Scholler plant in Germany, one in Switzerland, and from a Swiss sulphite-liquor alcohol plant are processed to produce yeast. This is interesting chiefly from the standpoint of reducing stream pollution.

The two Bergius wood-sugar plants in Germany were found to be using the technique described in the chemical literature before the war. This process is technically an interesting one, but plant investment and chemical requirements make it impracticable.

As the European war drew to a close, teams of technical investigators were sent into the occupied areas to evaluate the status of German industry and to obtain information which might be of value in conducting the war against the Japanese.

The authors of this report were members of the Forest Products unit of the Technical Intelligence Branch of the Joint Intelligence Objective Agency.

While the broad field of wood and cellulose chemistry has been investigated, discussion in this paper will be confined to the production and utilization of wood sugar with particular emphasis on the production of yeast from waste sulphite liquor from the pulp and paper industry.

This subject has been receiving increasing attention in America. In a short time a plant for the production of alcohol by the dilute-acid hydrolysis of wood will be in operation at Springfield, Oregon. Alcohol is now being produced from sulphite liquor at Bellingham, Washington. A company in Ontario, Canada, has been producing a high-grade bakers' yeast from sulphite liquor for a number of years. Various groups in the sulphite pulp industry in the United States have been investigating food-yeast production as a possible answer to their waste-disposal problem. A food-yeast company has a plant in Jamaica for the production of 3,000 tons of yeast per year from molasses. The entire ouput of this plant will be used to improve the low vitamin, low protein diet of the native population.

The investigation of wood sugar, food yeast, and alcohol production in Germany proved quite fruitful because these subjects had all been studied and used there for a number of years. Interested parties should realize that some products and processes described here may also be subject of U. S. Patents. Accordingly, it is recommended that the usual patent study be made before pursuing practical application.

The material contained in this paper is covered in greater detail in the unabridged report of the same title to be made available upon request to the Forest Products Laboratory, U. S. Department of Agriculture, Madison 5, Wis.

Production of Wood Sugar in Germany

Wood sugar for industrial processes was obtained in Germany during the war from the following sources:

1. The Scholler process.
2. The Bergius process.
3. Sulphite liquor.
4. A dilute-acid prehydrolysis of straw or wood preparatory to its use in the Bergius process or in the production of pulp.
5. Still bottoms obtained from the alcoholic fermentation of wood sugars that contain only pentose sugars.

The Scholler Process

Widespread rumor to the contrary, the Scholler process was not greatly expanded during the war. At the present time there are three Scholler plants in Germany, located at Tornesch, Holzminden, and Dessau. In addition to these, there is one plant in

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 25-28, 1946.

[1] Chemist, Forest Products Laboratory, Madison, Wisconsin, Forest Service, U. S. Department of Agriculture.
[2] Chemical Engineer, Pacific Northwest Forest Experiment Station, Portland, Oregon, Forest Service, U. S. Department of Agriculture.
[3] Technical Director, Consolidated Water Power and Paper Co., Wisconsin Rapids, Wis.
All three authors were overseas members of the Forest Products unit of the Technical Intelligence Branch of the Joint Intelligence Objective Agency.

Korea, one in Ems, Switzerland, and another was under construction at the end of the war near Florence, Italy.

The fundamentals of the Scholler process have been presented in the German literature from 1930 to 1940 by Schuller, Lüers, Karsch, Fritzweiler, Schaal, and others. More recently the group under Harris at the U. S. Forest Products Laboratory have contributed to this field.

Fundamentally, the process requires that twelve to twenty batches of dilute sulphuric acid be allowed to percolate through a column of wood chips at temperatures from 120° to 180° C. From 8 to 12 parts of sulphuric acid and about 1,200 parts of water are required for 100 parts of wood.

The German method differs markedly from that planned for a projected American plant. The Germans still consider it necessary to use a procedure which causes large and rapid pressure changes in the

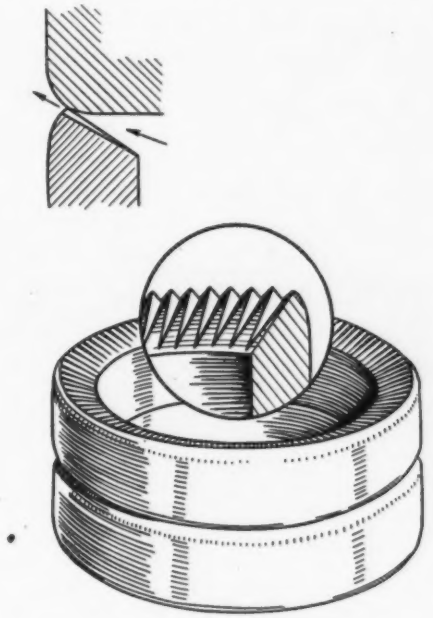


FIG. 1
The Scholler-Seidel Aerator

percolator. Successive portions of dilute acid are added at a temperature lower than that of the percolator by forcing them from a batch tank with steam. The batches are held in the top of the percolator and are heated by admitting steam from the bottom. After reaching the desired temperature, the liquor is discharged by introducing steam at the top. It was emphasized by the technicians interviewed that the presence of air is very detrimental to such operation. An instrument is used for programming and controlling the pressure differential and the withdrawal of the liquor. No significant advance has been made in neutralization, filtration, or cooling of the liquor.

The raw material commonly used in the Scholler process in Germany is fine shavings and fine sawdust, most of it apparently coming from resawing or finishing in woodworking shops. The usual loading in the percolators was 180 kilograms per cubic meter; the extreme range was 160 to 200 kilograms per cubic meter. An effort was made to avoid the use of hardwood but a certain amount of it was always present.

The Utilization of Lignin

The German chemists realize that lignin is a potentially valuable material which, if it were sold at even a modest price, would make the Scholler process more attractive economically.

So far in Germany there has been no significant utilization of lignin. The lignin produced at Holzminden is burned as a fuel. Some lignin from Dessau has been sold as an extender for plastics.

The lignin produced at Regensburg and at Rheinau by the Bergius process is not burned because of the corrosive hydrochloric acid contained in it. At Regensburg, lignin is dried to 20% moisture content and briquetted for use in domestic heating.

Much of the lignin produced at Tornesch is neutralized with calcium carbonate and used on the land for soil improvement. Its chief value lies in its effect on the physical properties of the soil. For this reason it finds a market in nurseries and green houses.

The Bergius Process

The technique used in sugar production by the Bergius process has been described in the chemical literature in 1937. There has been no significant change in procedure nor in the rate of through-put since that time.

The plants at Rheinau and at Regensburg evidence the fact that the process is an engineering achievement. An investigation of the plant costs and chemical requirements, however, makes it apparent that the Bergius process is uneconomic even in Germany. The plant at Regensburg which converts all the sugar to yeast has an output of 6,000 tons per year and cost $8,000,000. About 65 kilograms of hydrochloric acid is lost per 100 kilograms of yeast produced in the process.

The Prehydrolysis of Wood and Straw

In order to produce a high-alpha pulp directly by a kraft cook, the Phrix Company in Germany proposed to subject the original straw or wood chips to acid prehydrolysis to remove the hemicellulose. The high-pentose wood sugar obtained in this way was to be used for growing yeast. The Phrix Company worked out an ambitious and elaborate process and their program had the approval and support of the Reich. Other German pulp men were very critical of the process and its promoters, while the Phrix people blamed their lack of success on the war.

A pulp mill was completed by the Phrix Company in 1945 at Wittemberg to use straw as a raw material.

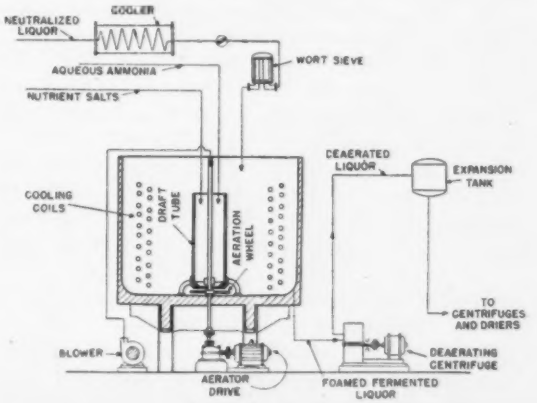


FIG. 2
Schematic Drawing of the Waldhof Fermentor

FIG. 3
Yeast and Alcohol Plant at Waldhof-Mannheim

Hydrolysis was carried out in twenty 125-cubic meter digesters charged with 80 to 100 kilograms per cubic meter, and hydrolyzed at 125° to 135° C. for 2 to 3 hours with 0.5% acid and an 8-to-1 ratio of liquid to solid. The hydrolysis and wash cycle required 12 hours. The final liquor had a sugar content of 2 to 3%. Four tons of straw treated in this way yielded 1 ton of pulp and ½ ton of yeast. The plant was expected to produce 20,000 tons of yeast per year. The pulp obtained by a kraft cook of the hydrolyzed residue was said to consist of 92 to 94% alpha-cellulose.

In the Kustrin plant, it was planned to hydrolyze softwood according to a similar scheme and to make a kraft pulp from the residue. At that plant, however, the acid concentration was to be 0.3% and the liquid-to-solid ratio 4.5 to 1. This was expected to give an 18% yield of reducing sugar, and finally to give a 32% yield of a 92 to 94% alpha pulp.

At a Waldhof pulp mill at Johannesmuhle wood was extracted with water, then a sulphate cook was made on the residue to produce pulp for acetylation and for cigarette paper. This mill had been in satisfactory operation. The carbohydrate extract had not been used, up to the present time, but plans were under way to use it.

Still Bottoms from the Alcoholic Fermentation of Spruce Sulphite Liquor or Scholler-process Wood Sugar

At the Dessau Scholler plant, at the Ems, Switzerland plant, and at a sulphite-liquor alcohol plant at Attisholz, Switzerland, still bottoms were processed to convert residual pentoses and, to a certain extent, the acetic acid and other organic material into yeast. The sugar content of the still bottoms was about 1%. Operations using this material were apparently satisfactory and profitable.

A feature of the use of still bottoms for the production of yeast is the marked tendency of the pH in such fermentations to rise because the yeast uses organic acids that are present in the form of salts. This leaves a basic residue. The effect can be counteracted by supplying nitrogen in the form of ammonium sulphate, which leaves an acid residue.

At both of the known plants using still bottoms, fermentation is carried out in Dr. Scholler's "Garautomat," or automatic fermentor which is described in a subsequent section of this report.

Sulphite Liquor

Sulphite waste liquor is the most important source of wood sugar for yeast and alcohol production in Germany. For many years it has been profitable to produce alcohol from spruce waste liquor. During the war, the use of beech for the production of chemical pulp was greatly extended. Because of its low hexose content the resulting liquor was useless for alcohol production. By using certain organisms, however, it was possible to utilize the pentoses and obtain high yields of fodder yeast. It has been common practice to use beech liquor for yeast production, and spruce liquor for alcohol. At the end of the war, however, one plant was under construction at Weisenbach on the Elbe to produce 1,800 tons of yeast per year from spruce liquor.

In German pulp mills it is common practice to drain the liquor from the digester. The drain liquors contain about 50% of the sugar produced in the cook. Washing is done in the digesters with secondary wash

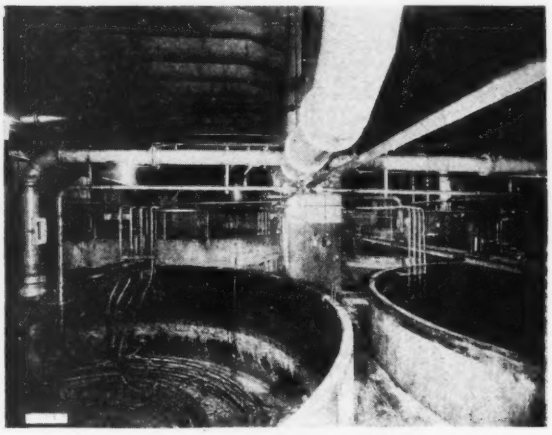


FIG. 4
Fermentors

water. In this way, a total of 80% of the sugar produced can be recovered at a concentration of about 3%. In beech this amounts to 12.8% yield of sugar based on the weight of the wood. Sugar yield and concentration from spruce is lower than from beech.

In 1944 six sulphite mills were producing yeast from sulphite liquor, and two new plants were under construction. Two others were on a small-scale production of "Biosyn," another food protein produced with the organism *Oidium lactis*. Nearly all the sulphite liquor produced in Germany was utilized.

Production of Alcohol from Wood Sugar

Continuous Fermentation in Scholler Plants

The rapid continuous fermentation of wood sugars by the yeast-reuse method has been carried out successfully in Scholler plants at Tornesch, Holzminden, Dessau, and at the Ems, Switzerland plant. Both reuse of yeast and continuous fermentation have been in use in America, but the fermentation time in the German operations is much shorter than that in any known previous commercial installations. The average holding time at Tornesch was 4 to 6 hours; that at Holzminden was 6 hours.

Dr. Karsch, of the Tornesch plant, was responsible for the application of this rapid fermentation process to wood sugars. The results of his work are incorporated in a patent, D.R.P. 692,812, held by the

Reich Monopolverwaltung. This conflicted with the Melle patents, which are held by Merck of Darmstadt, but the two groups came to some working agreement.

At the Holzminden Scholler plant, 1,000 cubic meters of wood-sugar solution per day moves through five 50-cubic meter covered-steel fermentors in series. Each fermentor is equipped with a small stirrer just large enough to keep the yeast in suspension. A bank of five centrifuges removes the yeast from the fermented liquor, and the yeast cream, amounting to 200 to 250 cubic meters per day is recycled with the incoming wort. There was reported to be 12% pressed yeast in the fermenting liquor. This agrees with the reported 20 to 40 grams per liter of dry yeast in the Tornesch operations. At both Holzminden and Tornesch it was claimed that this procedure is superior to conventional fermentations when using wood sugar.

In the Ems, Switzerland, plant three fermentors are used in series, and agitation of the yeast is accomplished by circulating some of the carbon dioxide.

According to Dr. Karsch, of the Tornesch plant, fermenting liquor at Ems is taken from the second and third fermentors and put back in the preceding ones to cause a backflow within the system. A concentration of about 4.0 to 5.0% pressed yeast is maintained in the liquor. Occasionally oxygen is blown into the fermentors to increase the rate of fermentation. A probable reason for the use of oxygen instead of air to improve the fermentation is that carbon dioxide is recovered and used to produce synthetic methanol, and it is undesirable to introduce nitrogen.

Fermentation of Sulphite Liquor

According to Dr. Scholler, 250,000 hectoliters of alcohol were produced per year from sulphite liquor. The process has been profitable in Germany for many years.

There does not seem to have been any new development in this field. Typical practice involves the hot neutralization of the liquor with lime accompanied by aeration, settling, cooling in a tower, and a 40-hour fermentation with yeast from the preceding fermentation.

Production of Food Protein from Wood Sugar

During the war years in Germany, yeast derived from wood sugar provided an important amount of protein for human and animal consumption.

As early as World War I, food yeast was produced from molasses. Many details of the present practices, however, are novel and are not generally known in the United States. The procedures uncovered are of value in relation to the following subjects:

1. Sulphite-Liquor Utilization

The production of yeast from sulphite liquor, by the utilization of pentoses, hexoses, acetic acid, and certain other organic materials causes a marked lowering of the biological oxygen demand. If future legislation requires that stream pollution from waste liquor be reduced, the information obtained should help the industry to determine whether such an operation would be profitable. Sulphite-liquor recovery processes, in which the lignin is to be utilized, can be preceded by a fermentation to produce yeast.

2. Industrial Aerobic Fermentations

In Germany, yeast has been produced successfully on a continuous basis using sulphite liquor, a substrate with extremely troublesome foaming properties. A very efficient mechanical aerator was developed together with a defoaming centrifuge which obviates the need for chemical defoamers. This equipment may be of interest to commercial producers of bakers' yeast, penicillin, or other products resulting from aerobic fermentations.

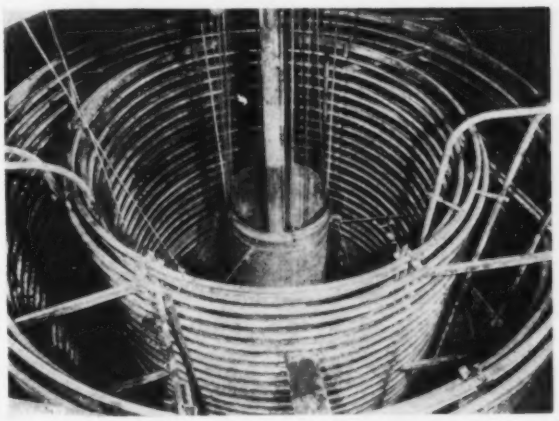


Fig. 5
Fermentor Cooling Coils

Amount of Food Yeast Produced in Germany in 1944

Production of food yeast from sulphite liquor.—In the beginning of 1944, Zellstofffabrik Waldhof, at Mannheim, was the only plant with a significant production of yeast from sulphite liquor. During the course of the year, five new plants were added:

Zellstofffabrik Waldhof at Kelheim—February, 1944
I. G. Farben at Wolfen, Yeast-plant 1—February, 1944
Zellstofffabrik Waldhof at Kostheim—July 1944
Feldmuhle at Obermunde—May, 1944
Aschaffenberger Zellstoffwerke in Stockstadt—July, 1944

In addition, the capacity of the Mannheim plant was increased 20% in November, 1944. The production of these plants is given in Table I.

TABLE I.—FOOD-YEAST PRODUCTION IN METRIC TONS FROM SULPHITE LIQUOR IN GERMANY

	Mannheim	Kelheim	Kostheim	Odermunde	Stockstadt	Wolfen
Monthly capacity	[1] 400	210	210	85	200	50
Maximum actual monthly production	370	189	118	47	116	44
Average monthly production	232	145	75.6	35.7	91.4	31

[1] Increased to 500 tons per month, November, 1944.

Two plants were under construction at the end of the war. One is at Wolfen (the second plant at Wolfen) which will produce 6,000 tons per year. At the end of the war, enough equipment was installed at this plant to permit a production of about 1,000 tons of yeast per year. The Neusiedler Company at Wiesenbach/E has a plant under construction which will use spruce liquor, in contrast to the others using beech, to produce 150 tons per month.

The total installed capacity for the production of yeast from sulphite liquor was 15,000 metric tons per year. Actual production, because of wartime difficulties, was 36 to 69% of the specified output.

Production of food yeast from sugars obtained by acid hydrolysis.—There are five plants in Germany producing yeast from sugar obtained by the dilute—or concentrated-acid hydrolysis of wood. With the exception of the Scholler plant at Holzminden, where inefficient practices prevailed, average production was about 70% of the specified output and amounted to 8,985 tons.

Organisms Used in the Fermentation of Wood Sugar

The organisms used on wood sugars which have been obtained by this and other investigating teams are listed in Table II.

TABLE II.—ORGANISMS USED IN THE FERMENTATION OF WOOD SUGAR

Organism	Use	Source
Torula utilis	Food-yeast production	Weihenstephen, T.H.
Torula pulcherima	Food-yeast production	Weihenstephen, T.H.
Monila candida	Food-yeast production	Weihenstephen, T.H.
Candida arborea	Food-yeast production	Weihenstephen, T.H.
Tornesch yeast[1]	Alcohol production	Tornesch
Mixed torula[2]	Alcohol, bakers' yeast and food-yeast production	Holzminden
Oidium lactis	Food-micelle Biosyn	Weihenstephen, T.H.
Oidium lactis	Food-micelle Biosyn	Lenzing
Oidium lactis	Food-micelle Biosyn	Wildshausen

[1] This sample spoiled in transit, but a mycelial type of yeast was isolated.
[2] This consists chiefly of a mixture of mycelial type and a *torula* type.

An effort was made to determine whether true pure culture fermentations were carried out in any plant. Apparently the operators pay little attention to this detail. It was admitted that in the course of several weeks' continuous operation, an inoculum that started pure could be replaced by a natural mixture. In any case, outside of the Biosyn plant at Lenzing, infection was not a serious practical problem.

An interesting case of the use of a natural inoculum was found at the Mannheim-Rheinau Bergius plant. Occupying troops at this plant destroyed the food-yeast culture, and when production was resumed, it was found that the natural flora of the plant gave perfectly satisfactory results.

Torula utilis.—This is the most important organism used in food-yeast production, both in regard to the amount of product and the number of installations using it. The organism utilizes hexoses, pentoses, acetic acid, and other organic material. No information was obtained about the development of the strain used for yeast production, but according to a Waldhof chemist it is an ordinary culture obtained from some university. A number of the people consulted said that acclimatization is rapid, and the particular strain used is of little importance.

Mixed torula.—At the Holzminden wood-sugar plant, the same inoculum of mixed strains is used for the production of bakers' yeast, alcohol, and food yeast. While it may not be completely satisfactory, it appears to be acceptable in all three uses. No effort is made to keep a standard laboratory culture for the mixture seems to maintain itself in the plant without interfering infection. An examination of this yeast made at the Chemical Research Laboratory of the Department of Scientific and Industrial Research, Teddington (Middlesex), England, showed that it consists of two types, one a *torula,* the other a mycelial type. This is the first known case of *torula* being used for the commercial production of alcohol.

Oidium lactis.—This organism, used in the Biosyn process at Lenzing and Wildhausen, is a fungus with a pronounced mycelial structure. Its large size presents one great advantage over *Torula utilis;* it can be separated from the substate by a conventional filter, avoiding the use of expensive energy-consuming centrifuges. The washing, too, is much simplified by its large size. The water required is only one-tenth that required for washing yeast. A disadvantage in the use of this fungus is the fact that the process is not well adapted to continuous operation, and in normal operation the inoculum is grown in four stages. Trial runs at Lenzing with continuous operation have extended up to 4 or 5 days but the vats were severely infected at the end of this time. There are mechanical difficulties in drying the micelle product, since it cannot be autolyzed to a fluid which may be spread or sprayed as required by conventional driers. The Lenzing group proposed to overcome this difficulty by putting it through a colloid mill. The product can be used in a wet condition, after heating to kill the organism.

The Biosyn process, according to Lenzing workers, cannot be carried out with the mechanical aerators and defoamers used in the Waldhof process. Chemical defoaming agents which must be used are expensive and affect the taste of the product.

The use of this product was not approved by the Wehrmacht, but large quantities of yeast were used for human and animal consumption. The taste of a dried laboratory sample of Biosyn was similar to that of *Torula utilis.*

Aspergillis niger was reported to give larger yields of protein than did *Oidium lactis* but its black color makes it undesirable as a food.

Monilia.—Cultures of this type of organisms are used at the Wolfen sulphite-liquor yeast plant, and at Dessau where still bottoms from the Scholler plant are processed.

Cultures of *Monilia candida* and *Candida arborea* have been obtained. The organisms referred to as *Monilia* possess an advantage in having a high optimum temperature (35° C.) and it is said that they are larger, heavier, and more easily centrifuged than *Torula utilis.*

Torula pulcherima.—A sample of this organism was obtained from the Weihenstephen Technical High School. Its use so far has been confined to experimental work.

Equipment Used in the Production of Yeast

The investigation of food-yeast factories in Germany showed that a variety of yeast-propagating systems were in use, ranging from simple vats operated discontinuously and aerated with perforated pipes to much more elaborate systems operated continuously with mechanical aerators.

The Tornesch Yeast Factory

At the Scholler plant at Tornesch a simple yeast propagating process was in operation using perforated-pipe aerators. Because this plant had processing equipment in excess of its sugar-production capacity, some molasses was customarily mixed with the wood sugar, although operation with Scholler wood sugar alone was said to be satisfactory.

The air requirement was about 35 cubic meters per kilogram of yeast produced. This is the highest air

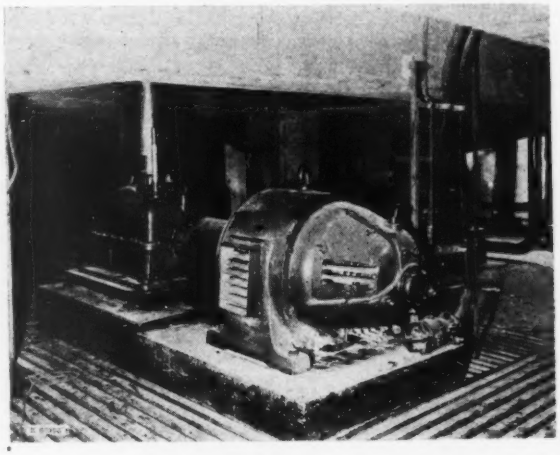


Fig. 6
Fermentor Aerator Drive

requirement of any of the plants seen. Operation in this plant could be carried on continuously for limited periods. The use of molasses, however, increased the infection problem.

The Scholler-I. G. Farben Method

An interesting continuous yeast propagating system with a novel nonmechanical aerator was devised by Dr. Scholler. This is in use for the processing of still bottoms at an Attisholz, Switzerland, sulphite alcohol plant, and at the Ems, Switzerland, and the Dessau Scholler plants. This system was studied and modified by Professor Rieche, of the I. G. Farben, and a small plant was operated at their Wolfen pulp mill. The system, as developed by Scholler, makes use of the Seidel aerators which consist of a stack of rings constructed as shown in Fig. 1. The advantages claimed for this design are a low resistance, easy cleaning, and easy sterilization. These aerators are installed in vertical pipes that take liquor from the bottom of a large fermentor, aerate it, and by an air-life effect, return it to the top of the fermentor. The air requirement is high, from 30 to 40 cubic meters per kilogram of yeast. The fermentor is divided by

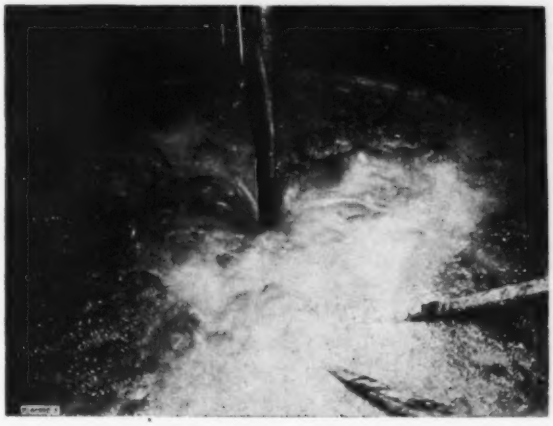


Fig. 7
Fermenting Liquor

baffles to prevent mixing of the incoming liquor with the outgoing. There is an aerator at each baffle section. The vertical pipe sections above the aerators are equipped with cooling jackets to remove the heat of fermentation.

No chemical defoamer is required in the process. The foam is broken partially by the impact of the recycled liquor. A special centrifuge serves to recover a 20% yeast cake from the foam. The part of the yeast not removed by this operation is recovered by conventional centrifuges from the liquid defoamed by the schaumschleuder and recycled through the fermentor. This raises the yeast concentration and brings about a more rapid conversion. The modification introduced by Professor Rieche consisted in an elimination of the baffle system.

Vogelbusch Fermentor

The type of fermentor developed and patented by Vogelbusch (*2*) represents an ingenious attempt to increase the efficiency of aeration in the production of yeast by the use of a mechanical aerator designed to produce small bubbles.

This system, as seen in Germany, makes use of a large, hollow, perforated, three-bladed propeller rotating about 50 centimeters above the bottom of a

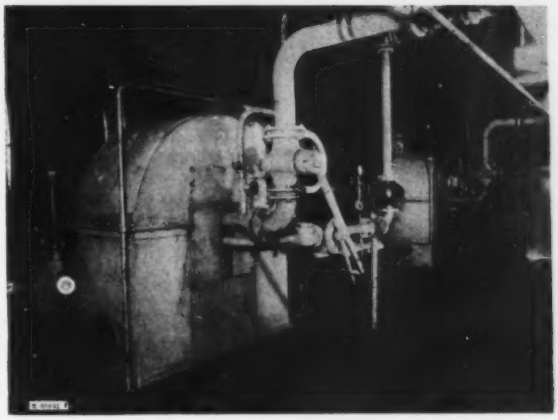


Fig. 8
Schaumschleuder or Foam Breaker

250 to 300 cubic-meter vat. The vats have a height about equal to the diameter. The propellers are driven from below and air is led to them from above through a large central pipe. The holes in the propeller increase in size from 2 millimeters at the hub to 4 millimeters at the periphery.

The shearing effect of the liquid moving across the perforations results in the production of small bubbles. Fermentors of this type were seen at the Regensburg Bergius plant, and at the Holzminden Scholler plant. At Regensburg the propellers were driven at 8 revolutions per minute by a 20-kilowatt motor. Fermentation was discontinuous and required 10 hours. About 4 metric tons of sugar were fermented at a time. The inoculum was taken from a preceding fermentation, and the amount used calculated as dry yeast was 10 to 20% of the weight of the sugar being fermented. The sugar concentration was about 4% and the total volume about 100 cubic meters. Air was supplied from the compressors at 0.4 atmosphere. Twenty cubic meters of air were used per kilogram of yeast produced; the use of 30 cubic meters of air results in a higher yield, but the cost becomes excessive.

The Holzminden yeast equipment was similar to that at Regensburg, except that the propeller was turned at 30 revolutions per minute by a 30-kilowatt motor, and the fermentors were closed and could be sterilized.

Biosyn Process

The Biosyn process was promoted by the Biosyn Gesellschaft of Weimar under the leadership of Dr. Peukert. The preferred raw materials for the process are whey or sulphite liquor. One of the plants using sulphite liquor, that at Lenzing, Austria, was investigated. The Lenzing plant has never been in satisfactory operation and at best could prepare only a ton per day. There were no accurate data available on yields and no meters were used to measure the air used for the fermentation. Difficulties were encountered when this plant attempted to operate on a continuous basis, but judging from the nature of the operations, this fact should not be given too much significance.

The process requires that an inoculum be grown in four stages, the first three with sterilized liquor, in 5-liter, 300-liter, and 2,000-liter fermentors which are kept about half full. Foam is destroyed by chemical defoaming agents. The pH is kept at 6.0 to 6.5

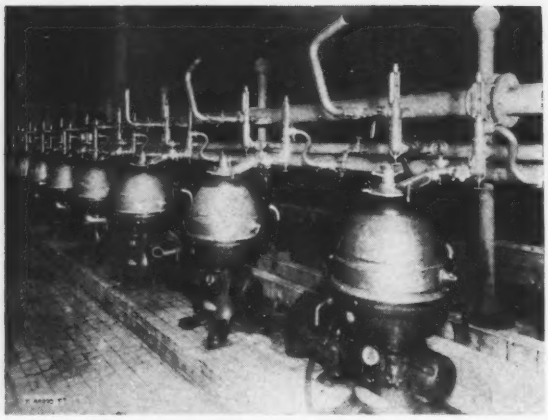


FIG. 9
Yeast Separators

and the usual nutrients are added. The last two stages in 20,000 and 200,000-liter fermentors use unsterilized liquor.

The method of aeration at the Lenzing plant is very simple. In the final stage a 130-kilowatt motor is used to drive a perforated paddle at 130 r.p.m. and air is admitted at the bottom of the tank through a simple open-end pipe.

The organism was separated on a rotary filter, washed, and killed by heating to 100°C. for 15 minutes. The wet product with 20% dry substance was spread by hand on a rotary drier. This was a very unsatisfactory operation. Plans were under way to pass the product through a colloid mill and then spray- or drum-dry it. At Wildshausen the organism is killed and used wet in sausage, or as a spread for bread.

PHRIX PROCESS

The efforts of the Phrix Company in the production of wood sugars by pre-extraction of wood or straw and its subsequent conversion to yeast has been highly over-publicized in Germany. Their Wittemberg and Kustrin plants were in Russian territory and were not visited by a representative of this team. It is known, however, that only a small production occurred at either of these plants. Certain of the company personnel were interviewed at the Hamburg business office.

According to the information received from them, the fermentor makes use of a mechanical aerator in which air rising from a distributor ring in the bottom of the tank is dispersed by a rotating inverted dished plate. This plate was on a shaft driven by a motor above the fermentor. At about the midpoint on the shaft was a vaned cylinder which served simultaneously as a draft tube and as a centrifugal foam breaker.

The fermentors have a capacity of 200 cubic meters and are about 60% filled with liquid. The stirrer turns at 90 r.p.m. The production of 1 kilogram of yeast was said to require 12 to 15 cubic meters of air. The time of fermentation is 8 hours and the final yeast concentration is 1 to 1.5%. No chemical defoamer is required. In other respects, the Phrix method possessed no novel features.

THE WALDHOF METHOD OF YEAST PRODUCTION

The outstanding method for the production of yeast in Germany is the Waldhof technique. This method holds a unique position because:

1. It is soundly engineered.
2. It has been tested in extensive operation since 1940.
3. It has been accepted by other pulp companies. Besides being used in three Waldhof mills, Mannheim, Kilheim, and Kostheim, it is used in a Feldmuhle mill at Obermunde, in an Aschaffenberger mill at Stockstadt, and in addition two new plants are under construction, one an I. G. Farben plant at Wolfen, the other a Neuseidler plant at Weisenbach on the Elbe.

The fact that the new I. G. Farben plant at Wolfen made use of the Waldhof system was considered especially interesting because this plant had carried out extensive experiments on, and actually built, a small commercial unit using the Scholler method of yeast production.

Up to the present time, the Waldhof technique has been applied on a commercial scale only to sulphite liquor. All the units now in operation use beech liquor, and one under construction, Neuseidler A. G., will use spruce liquor. There is reason to believe that

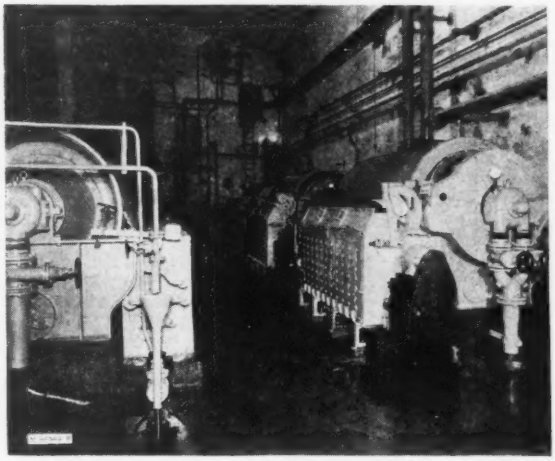


FIG. 10
Rotary Filters

this process would be equally suitable for any substrate.

Apparently at the request of the Reich and representatives of industry, the Waldhof Company designed what became known as the Standard yeast plant. This plant was capable of producing 1,000 tons per year of yeast containing 7% moisture. In order to produce more than 1,000 tons per year, multiples of the standard plant were installed. It is doubtful whether there was a rigid standard design as each plant showed minor variation, but the basic design is still considered sound.

Following is a summary of information on the Waldhof procedure; a more detailed description of each operation will be found in the complete report to which reference has been made *(1)*.

Liquor used.—Beech or spruce liquors are equally suitable for the production of yeast. Sulphite liquor from the production of rayon pulp is better than the liquor from milder cooks. Contrary to what might be expected, the fermentation time is about directly proportional to the sugar concentration; hence the output from a fermentor is independent of liquor concentration. This relationship holds over the range of 2 to 4% sugar. This point was confirmed by

Waldhof technicians. Specifications make it apparent that plants are designed on this basis. Such relationship seemed questionable because lower sugar concentrations support lower yeast concentrations and would be expected to result in lower output. This might indicate that aeration is still a limiting factor in rate of yeast production.

Neutralization.—The sulphite liquor is neutralized by lime with concurrent aeration to pH 4.5. The liquor is clarified by settling, cooled in a heat exchanger, and the prepared liquor is run continuously into the fermentor. The details of these steps, together with the air and time requirement, are available *(1)*. It is believed, however, that the technique of liquor preparation now in use at the Bellingham sulphite liquor alcohol plant *(3)* represents a real advance over the German procedure.

Nutrients.—The nutrients required per 100 kilograms of sugar are as follows:

P_2O_5	2.0 kg. (3.7 kg $(NH_4)_2 HPO_4$)
N	3.5 kg. (17.1 kg. 25% aqueous ammonia)
KCl	2.0 kg.
$MgSO_4$	1.5 kg.

Fermentor.—The chief factors determining the material of construction of the fermentors have been cost and availability. Wood vats are satisfactory. Unpainted concrete is undesirable because the vigorous mechanical aeration and the pH of 4.5 to 5.0 results in much sand getting into the product. The latest fermentor built at Mannheim has a volume of 300 cubic meters and is of concrete lined with tile. Others at Mannheim are of painted concrete. The mechanical aerator consists of a wheel about 1.7 meters in diameter with six air ducts leading to its periphery. This wheel is driven from top or bottom by a 100-kilowatt motor at about 400 r.p.m. Air is supplied through a central pipe at a rate of 8 to 12 cubic meters per kilogram of yeast produced. A central draft tube, approximately the size of the aeration wheel, ensures satisfactory circulation of the liquor. A detailed drawing of an aeration wheel and draft tube is available *(1)*. A schematic drawing of the fermentor is shown in Fig. 2.

The Waldhof system represents a departure from conventional efforts to obtain efficient use of the air. Other techniques concentrate on getting very fine dispersion of the air. This, with sulphite liquor, results

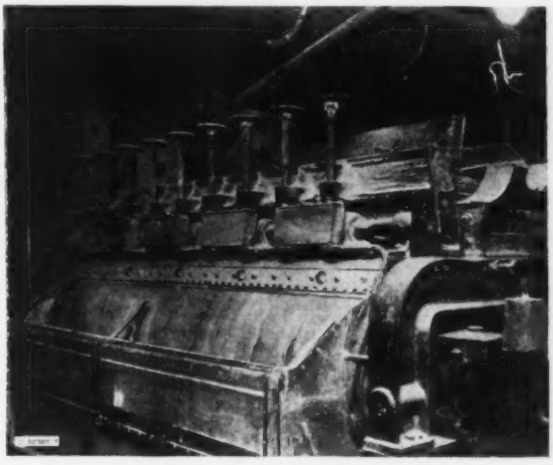


FIG. 11
Drum Driers

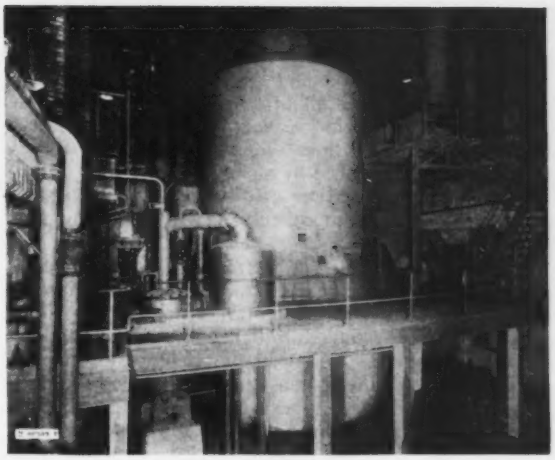


FIG. 12
Spray Drier

in the production of very refractory foams. In the Waldhof method, air is introduced through tubes about 3 inches in diameter rotating at high speed. The aeration wheel is so arranged that it functions as a centrifugal pump and circulates the frothed liquid through the central draft tube. This circulation avoids the accumulation of stable foam at the top of the vat and thus facilitates continuous operation. The air requirement with this equipment is about 8 cubic meters per kilogram of dry yeast. This is lower than any other known yeast-propagating method.

The fermentation is carried out at 32° C. Approximately 4,500 calories must be removed per kilogram of yeast produced. This is dissipated by cooling the feed to 20° C., and by the use of stainless steel cooling coils in the fermentor. The large quantity of cooling water required is all used subsequently in the pulp mill. Because the contents of the vat are a foam, heat transfer is slow. A coefficient of 230 calories per square meter per hour per degree Centigrade is used with an additional 20% allowance for dirtying. A 200-cubic meter fermentor requires 150 cubic meters of cooling-coil surface with cooling water at 13° C.

According to the design data relating to the standard yeast plant *(1)*, 331 kilograms of sugar are converted to 126 kilograms of 93% yeast per hour in a 200 cubic meter fermentor. In such a fermentor the following conditions exist:

Ratio of liquid to emulsion	1 to 3.2
Weight of emulsion	312 grams per liter
Amount of liquid in fermentor	54 cubic meters
Amount of emulsion in fermentor	173 cubic meters
Power consumed	90 kilowatts

The rate of addition and time of fermentation is dependent on the sugar content. With 2.6% sugar the rate of addition is 12 cubic meters per hour and the time of fermentation is 4.5 hours. With higher sugar concentrations the rate of addition is slower and time of fermentation is longer. The yeast output from the fermentor remains the same.

"Schaumschleuder."—Yeast emulsion is removed continuously from the fermentor. The foam is broken by a schaumschleuder (a rotating drum mounted on a horizontal axis) and the yeast is removed by conventional separators. Foam is led into it through the open face. Defoamed liquor is withdrawn by a stationary tube leading to its inner circumference. The unit also acts as a centrifugal pump to raise the

fermented liquor to an elevated tank from which it is fed by gravity to the yeast separators. The schaumschleuder required for the output of a 1,000 ton per year plant has a diameter of 1.3 meters, turns at 750 r.p.m., and consumes about 40 kilowatts. It is questionable whether so large an amount of power is required for this operation. There is evidence that this machine can be replaced by a simple centrifugal pump, but further investigation of this point is desirable. Drawings of a schaumschleuder are available for reference *(1)*.

Yeast separators.—The fermented liquor is concentrated to a maximum of 12% in conventional yeast centrifuges. American manufacturers have had an opportunity to become familiar with the removal of yeast from sulphite liquor in the Bellingham alcohol plant, and at a bakers' yeast plant in Canada and in Nova Scotia. There appear to be no unusual difficulties in this operation.

Rotary filters.—The present German practice is to thicken the yeast cream from the centrifuges on a rotary cloth-covered filter, but there has been much dissatisfaction with this procedure.

The recent development of a new centrifuge available in America, that yields a more concentrated yeast cream, might eliminate the need for this piece of equipment.

Autolyzer.—The thick yeast cake from the rotary filter presents a handling problem, but this has been solved by heating it to about 80° C. in the jacketed collecting tank on the filter. Liquefaction occurs and the material can then be easily handled with a pump.

Drying equipment.—Prior to final drying the yeast is usually concentrated to 30% solids in a pre-evaporator. This and subsequent water removal are simple engineering details for which many alternative schemes can be devised. There seem to be no unusual problems in the operations.

The drying of the yeast concentrate may be completed on a rotary drier or in a spray drier. Present opinion favors the use of the rotary drier. The product obtained in this way has a better taste and can be more readily dissolved. The machinery requires less space but it suffers the disadvantage of putting much dust in the room unless it is enclosed. The specific factor of evaporation on drying from 30 to 93% solids is 28 to 30 kilograms of water per square meter per hour.

Cost of yeast production.—Sufficient data are available to arrive at a reasonable estimate of processing costs for the production of yeast by the Waldhof method *(1)*. This information may be summarized as follows:

(a) Plant cost.—The cost of erection of a 1,000 metric ton per year plant in Germany in 1943 was 300,000 marks, or about $120,000. No accurate estimate has yet been made of the cost of a similar plant in the United States.

(b) Power requirement.—The total power requirement for yeast production is 2.36 kilowatts per kilogram of yeast. This is divided as follows:

	Per Cent of Total	Kilowatts
Liquor preparation	9	0.21
Aerator drive	29	0.69
Schaumschleuder	18	0.42
Separation and drying	24	0.57
Water pumping	20	0.47

(c) Water requirement.—All cooling water in the yeast plant is used subsequently in the pulp mill. The water used for other purposes, such as washing the product, amounts to 94 liters per kilogram of yeast.

(d) Steam requirement.—Whether a spray drier or a drum drier is used, the steam requirement is about 6.7 kilograms per kilogram of dry yeast.

Illustrations.—Figures 3 to 12 show details of the Waldhof Mannheim plant. Of particular interest is the view of the fermenting liquor, Fig. 7. In this photograph the material is seen to be a free-flowing froth rather than the more solid "whipped cream" type of foam which can be formed from sulphite liquor by other methods of aeration.

Summary

Information has been obtained on German practice in the production of wood sugar, yeast, and alcohol.

The Waldhof method for the production of food yeast from sulphite liquor has been described and sufficient technical data are available to build similar plants in the United States. The use of this method results in a nearly complete removal of carbohydrates from sulphite liquor, and a large decrease in its biological oxygen demand. After the production of yeast, the effluent may be used for any other waste liquor utilization not requiring the presence of carbohydrate.

Literature Cited

1. Saeman, J. F., Locke, E. G., and Dickerman, G. K., The Production of Wood Sugar in Germany and Its Conversion to Yeast and Alcohol. (Unabridged.) (To be made available from Forest Products Laboratory, U. S. Department of Agriculture, Madison 5, Wis.)
2. Vogelbusch, W., Austrian patents: 122,951 (1934); 123,393 (1934); 126,573 (1933); 127,365 (1934); 128,825 (1935); 136,969 (1934); 142,217 (1934).
3. Ericsson, E. O., *Pulp and Paper Ind.* 19 (11): 42 (1945).

Edward Alexander Haynes

Edward Alexander Haynes, Vice President of the Port Huron Sulphite and Paper Company, died on Sunday, September 1st, at his home 4266 Gratiot Ave., Port Huron, Mich. Mr. Haynes was born in Port Huron on July 18, 1886 and graduated from the University of Michigan in 1908 as a mechanical engineer.

After graduating he became associated with his father, the late F. J. Haynes of the Haynes Lumber Company from 1908 to 1913. In 1913 he became an executive in the Port Huron Paper Company, which later merged with the Michigan Sulphite Company to form the Port Huron Sulphite and Paper Company.

As Vice President and Sales Manager he was highly regarded in the industry. He was Director and Vice President of the North Shore Transit Company, which conducted the handling of the products of the Port Huron Sulphite and Paper Company when the firm operated its own fleet. He was active in the American Paper and Pulp Association and was a charter member of the Tehcnical Association of the Pulp and Paper Industry.

Mr. Haynes was a keen sportsman all his life and was one of the Blue Water District's outstanding yachtsmen until his illness about ten years ago. He was also an ardent fisherman and duck hunter. He was a charter member of the Bradenton Lake Okechobee Fishing Club in Flórida. In recent years he spent his winters in Florida. He was a member of Grace Episcopal Church, Pine Grove Lodge No. 11, A. F. & A. M., Port Huron Lodge No. 343, B.P.O.E. and Port Huron Commandery No. 7, K. T.

Mr. Haynes is survived by his widow, Mrs. Alma M. Haynes, two sons James E. and Alexander H., his mother Mrs. Anna Haynes, a sister Mrs, Walter R. Wright and a niece and a nephew, all of Port Huron.

Paper and Paper Stock Imports At New York and Other Ports

NEW YORK IMPORTS

WEEK ENDING SEPTEMBER 14, 1946

SUMMARY

Newsprint .....12,978 rolls
Wallpaper .....10 parcels
Parchment Paper .....12 cs.
Decalcomania Paper .....31 cs.
Pottery Tissue Paper ..... 6 cs.

NEWSPRINT

H. G. Craig Co., G.T.D., Donnacona, 374 rolls.
N. Y. Journal American, Markland, Liverpool, N. S., 881 rolls.
N. Y. Tribune, Inc., Markland, Liverpool, N. S., 1743 rolls.
N. Y. World Telegram, Markland, Liverpool, N. S., 563 rolls.
Herald Statesman, Inc., Markland, Liverpool, N. S., 42 rolls.
Richmond Newspapers, Inc., Markland, Liverpool, N. S., 1338 rolls.
International Paper Co., International No. 1, Gatineau, 308 rolls.
H. G. Craig Co., G.D.D., Donnacona, 372 rolls.
News Syndicate Co., Colabee, Baie Comeau, 7357 rolls .

WALLPAPER

F. Henjes, Jr., Maine, Copenhagen, 10 parcels.

PARCHMENT PAPER

F. C. Strype, Union Victory, Antwerp, 12 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., Krosno, London, **31 cs.**

POTTERY TISSUE PAPER

B. F. Drakenfeld & Co., Krosmo, London, 6 cs.

RAGS, BAGGINGS, ETC.

Green Textile Associates, City of Dundee, Cochin, 400 bls. cotton waste.
Volkart Bros., Inc., City of Dundee, Cochin, 41 bls. cotton waste.
American Express Co., Maine, Copenhagen, 50 pkgs. worsted waste.
Castle & Overton, Inc., Alf Lindeberg, Buenos Aires, 15 bls. worsted waste.
J. Eisenberg, Alf Lindeberg, Buenos Aires, 20 bls. wool waste.
Star Woolen Co., Alf Lindeberg, Buenos Aires, 38 bls. wool waste.
Padawer & Co., Alf Lindeberg, Recife, 69 bls. pickers.
Railway Supply & Manufacturing Co., Alf Lindeberg, Buenos Aires, 227 bls. pickers; 108 bls. cotton linters.
Newark Cotton Felt Manufacturing Co., Alf Lindeberg, Recife, 225 bls. cotton linters.
Castle & Overton, Inc., Alf Lindeberg, Montevideo, 50 bls. paperstock.
Americale Trading Co., Alf Lindeberg, Montevideo, 14 bls. new light rags.
Castle & Overton, Inc., Union Victory, Antwerp, 27 bls. new dark cuttings and rags.
E. S. & A. Bank, Kaipaki, Melbourne, 15 bls. wool rag cuttings.
(———), Kaipaki, Melbourne, 39 bls. wool waste; 3 bls. underwear cuttings.
Chase National Bank, Kaipaki, Melbourne, 43 bls. wool rags and waste.
Castle & Overton, Inc., Eucadia, Glasgow, 600 bls. new jute bagging.
E. Butterworth & Co., Inc., Lista, Antwerp, 68 bls. old bagging.
Irving Trust Co., Lista, Antwerp, 300 bls. picker waste.
Riverside Mills, Aberdeen Victory, Shanghai, 350 bls. cotton waste.
Padawer & Co., Aberdeen Victory, Shanghai, 425 bls. cotton waste.
New England Waste Co., Aberdeen Victory, Shanghai, 100 bls. cotton waste.

GLUESTOCK, ETC.

J. Gorvers, Pan Crescent, Barranquilla, 54 bls. gluestock; 455 rolls hide cuttings.

CASEIN

F. H. Paul & Stein Bros., Alf Lindeberg, Buenos Aires, 1000 bags ground lactic).
Colloids, Inc., Alf Lindeberg, Buenos Aires, 500 bags (ground).
Crawford Callan & Co., Alf Lindeberg, Buenos Aires, 400 bags (ground lactic); 740 bags (lactic).
Crawford Keen Co., Alf Lindeberg, Buenos Aires, 2000 bags (lactic).

BOSTON IMPORTS

WEEK ENDING SEPTEMBER 14, 1946

Leigh Textile Co., Aberdeen Victory, Shanghai, 100 bls. cotton waste.
E. C. Andres & Son, Aberdeen Victory, Shanghai, 600 bls. cotton waste.
C. Kutz, Aberdeen Victory, Shanghai, 50 bls. cotton waste.

PHILADELPHIA IMPORTS

WEEK ENDING SEPTEMBER 14, 1946

Castle & Overton, Inc., Union Victory, Antwerp, 27 bls. housecloths (rags).

Volkhardt Joins St. Regis

NEW YORK—William T. Volkhardt has joined the sales promotion department of the St. Regis Paper Co., in charge of market research. Mr. Volkhardt was affiliated with the Bethlehem Steel Corporation for five years as an industrial engineer and prior to that he was a market research analyst for the Scott Paper Company.

Badger Mills Asks Forest Protection

MARINETTE, Wis.—"Help keep our forests growing," is the appeal of Badger Paper Mills, Inc., in an effort to educate the public to the consciousness that no matter how extensively paper mills may plant new forests, all such plantings will be futile if they are permitted to be destroyed by fire. The company, which is located at Peshtigo, has resorted to newspaper advertising to carry its forceful message to the people. It stresses the fact that human beings start most fires through carelessness. The advertisement says:

"Forest protection is a big job!

"You can make the job easier with only a little effort on your part.

"The fire-watcher, in his tower, protects baby trees which will some day produce forest crops for your many needs. Perhaps he guards a tree farm . . . perhaps a young forest. He *knows* that baby trees must be watched over as carefully as any young baby.

"Every year fire destroys millions of both young and mature trees worth millions of dollars. Most forest fires are caused by people.

"Don't be one of the people who cause fires.

"Break that match between your fingers . . . Smudge out that cigarette under your heel . . . Make sure your campfire is out before you leave it."

Projected Riegel Mill Is Held in Abeyance

NEW YORK—Officials of the Riegel Paper Corporation this week commented on local news from North Carolina about a projected pulp and paper mill in that state to be built and operated by Riegel.

"It is true," said a Riegel spokesman, "that we have CPA approval for certain construction at Acme, N. C., but at this moment no contracts have been placed and the program at that site has been held in abeyance. We actually own 140,000 acres of timberland in North Carolina, and intend, at the proper time, to develop our property with a pulp and paper mill. It is premature, however, to convey the impression that early construction is in prospect."

OPA Adds Five Per Cent To Chlorine, Caustic, Soda Ash

WASHINGTON — Producers' ceiling prices for chlorine, caustic soda and soda ash have been increased five percent by the Office of Price Administration. The increase, effective September 16, was mandatory under the Price Control Act to lift producer earnings to the 1936-39 base level.

As required by the new price control act, resellers are permitted to raise their ceilings so as to give them their March 31, 1946, percentage mark-up over current acquisition cost.

Week's Record of Trends in The Pulp and Paper Market

Office of the PAPER TRADE JOURNAL,
Wednesday, September 18, 1946.

Current paper and paperboard situation shows little change. Speculation, raw material and freight car shortages continue to run roughshod over the industry as a whole. Reports indicate a freight car shortage, even worse than during the war, continuing well into next year. Freight priorities are shunned by government officials, while railroads plan temporary embargoes to expedite shipments. Orders for new freight cars are far short of present needs. Meanwhile, supplies of paper and board lag behind ever-pressing demands.

Movement toward integrated operations continues with some indication that emphasis is on mills expanding or establishing their own converting processes. While capacity figures are not available in all cases, reports indicate 10 paper mills with an annual rated capacity of 400,000 tons (mostly book paper) have been taken over by publishers; 14 board mills with combined capacity of 351,000 tons a year have been purchased by converters or integrated mills; 9 box factories either purchased, built, or under construction by board producers (no complete capacity figures are available, but one plant is scheduled for 500 million milk bottles a year and the container and box capacity will run well up in the thousands of tons); 7 mills with a combined capacity of 14,000 tons of tissue paper and 75,000 tons of board have been purchased by various converters; and 13 paper mills with an annual capacity of 312,000 tons have been bought by other mills, most of which have their own converting plants for various products. The above figures total 1,160,000 tons a year (not including board consumed in purchased box shops), on the basis of 310 working days, practically all of which has been removed from the open market.

Hourly earnings in all segments of the pulp and paper industry with one exception, according to Department of Commerce reports, continue to rise; earnings rose to a peak of 97.9 cents per hour for all segments of the industry and to 102.41 cents per hour for the paper and pulp manufacturing segment. The only segment of the industry that did not record an advance in hourly earnings was the paper bag industry; which dropped 1 cent from its all time peak of 88 cents per hour reached back in April and May.

The index of general business activity for the week ended September 7 fell to 132.8 from 136.2 in the previous week, compared with 123.4 for the corresponding week in 1945. The index of paperboard production fell to 160.7 from 164.8 in the previous week, compared with 139.2 for the corresponding week in 1945.

Paper production for the week ended September 7 was estimated at 86.7 per cent, compared with 105.6 for the preceding week, with 75.9 for the corresponding week in 1945, with 74.4 for 1944, with 74.6 for 1943, and with 85.2 per cent for the corresponding week in 1942.

Paperboard production for the week ended September 7 was 83.0 per cent of capacity, compared with 100.0 per cent for the preceding week, with 80.0 for the corresponding week in 1945, with 80.0 for 1944, with 83.0 for 1943, and with 81.0 per cent for the corresponding week in 1942.

Wood Pulp

Domestic wood pulp production in the first six months of this year was 0.6 per cent below the first half of 1945; while paper and paperboard production has shown a gain of 8 per cent during the same period; which is definite evidence of the importance and significance of wood pulp obtained from Canada and overseas sources.

Foreign market wood pulp, therefore, should receive special consideration. Production costs have risen in Canadian and Swedish pulp mills; and recent increases in OPA pulp prices are still not enough to allow these mills a fair profit in exporting pulp to this country. Meanwhile, Canada and Sweden are receiving very attractive offers for their pulp from all parts of the world. Unless the dragging anchor of OPA is hauled in; the common business sense of Canadian and Swedish pulp men will force them to sell their product outside the United States; they have no other course if their business is to survive.

Rags

New cotton cuttings remain in tight supply. All high grades such as white shirt cuttings and unbleached muslins are as short as they were at any point during the war. Some dealers complain they are unable to secure cuttings at supply sources at ceiling prices.

Demand for old rags is steady, but not particularly strong. White rags and thirds and blues are most active. Standard classification rags continue at $29 to $31 in deals with heavy wipers at $50 to $55. Foreign rags at $72 to $80 find some takers.

Old Rope and Bagging

Market for all types of rope remains unchanged. Soft jutes are strong at 4.50 to 5.50c, and mixed strings continue at 1.75c to 2.00c. Large No. 1 sisal brings 4.75c, small sisal 4c, and No. 1 quality Manila 5.75c. Tarred and otherwise poor grade Manila brings 2 to 2.50c per pound.

Bagging market remains relatively firm with Australian wool pouches at $4.25 to $4.37½ taking the spotlight. Mill run gunny brings $4.00 to $4.25; with heavy scrap burlap to paper mills going at $4.37½ to $4.62½ or $4.75 for special packs.

Waste Paper

Demand continues very heavy due to bleached pulp shortages and general pulp uncertainties. Reports indicate a steady trend of upgrading with some sales forcing the lid on ceilings.

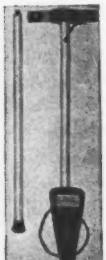
All good grades command top prices. Officially, white envelope, one cuts, remain $67.50; triple sorted No. 1 brown soft kraft $50 for quality paper; and No. 1 heavy books and quality magazines $38.50.

Casein Output Up 42 Per Cent in July

WASHINGTON, D. C.—Production of dry casein in July is estimated at 2,310,000 pounds, the Bureau of Agricultural Economics reported this week. This total was 42 percent higher than a year earlier but 34 percent less than the 1940-44 July average. The seasonal decline from June to July was about the same as last year and the five-year average. According to revised estimates, production during the first seven months of 1946 totaled 11,230,000 pounds, a gain of 19 percent from the same period in 1945.

ARE YOU A

good guesser?

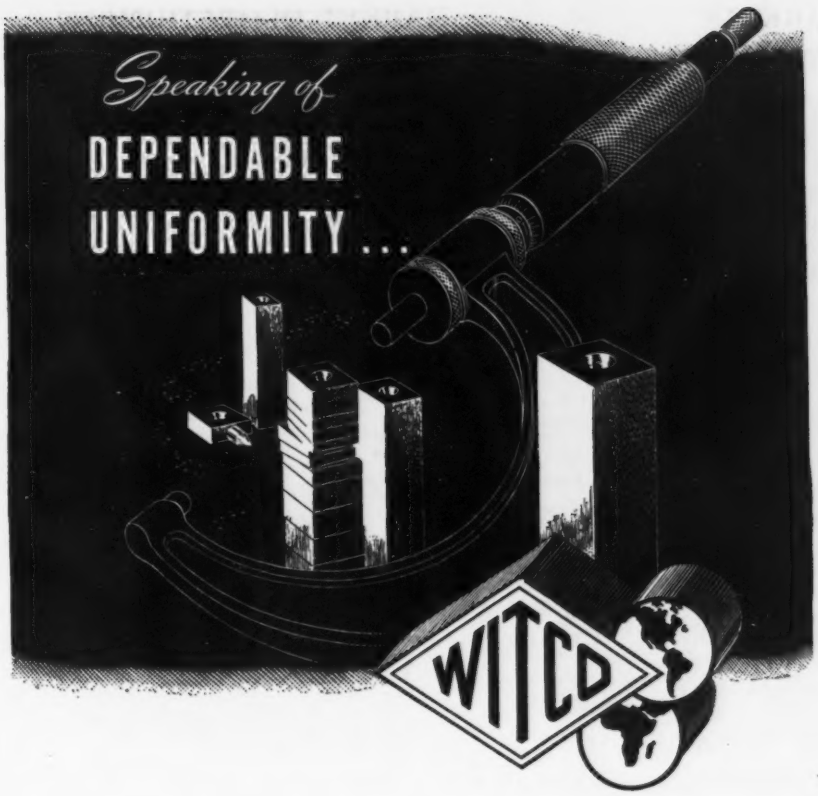


Guessing and good paper making do not go together unless you are ready to pay the losses that result from spots, curl, crackle and blisters, when you guess wrong. But why guess? You can accurately, quickly and conveniently check the surface temperature of any still or moving roll with the Cambridge Surface Pyrometer.

The CAMBRIDGE is made in a hand model and with an extension to reach those hard-to-get-at places.

Send for bulletin 194-SA.

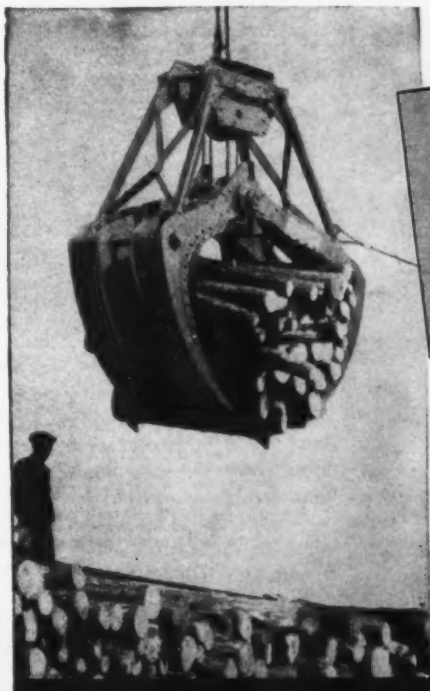
CAMBRIDGE
SURFACE PYROMETERS
CAMBRIDGE INSTRUMENT CO., INC.
3702 Grand Central Terminal
New York 17, N. Y.



● Precision gauge blocks represent the utmost in uniform standards of accuracy for the metal-working industries. And just as definitely the Witco trademark signifies absolutely dependable uniformity of products for industries devoted to plastics, rubber, paint, paper, ink, steel-fabrication, cosmetics and drugs, ceramics, leather.

WITCO CHEMICAL PRODUCTS FOR THE PAPER INDUSTRY
CARBON BLACKS • WITCARBS • SEALERS
BLANC FIXE • MICAS • WAXES

WITCO CHEMICAL COMPANY
Manufacturers and Exporters
295 MADISON AVE., NEW YORK 17, N. Y.
LOS ANGELES • BOSTON • CHICAGO • DETROIT
CLEVELAND • SAN FRANCISCO • AKRON
LONDON AND MANCHESTER, ENGLAND



THIS GRAPPLE GRABS A MOUTHFUL... OPENS IN A HURRY FOR ANOTHER BITE!

Down into the hold and out... jaws crammed with pulpwood logs ... overside and back.

Two thousand cords unloaded from lake boat hold to shore in only forty-six hours! A routine job for a No. 16 Blaw-Knox Pulpwood Grapple.

This grapple is built for fast unloading from ship or car... fast re-handling from stacks.

BLAW-KNOX DIVISION OF BLAW-KNOX COMPANY
2119 Farmers Bank Bldg., Pittsburgh 22, Pa.
New York • Chicago • Philadelphia • Birmingham • Washington

BLAW-KNOX PULPWOOD GRAPPLES

Send for your copy
Bulletin No. 2043

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, September 18, 1946.

BLANC FIXE—Demand active with tight situation in raw materials. Pulp is currently quoted at $40 per ton, in barrels, car lots, at works; the powder is currently quoted at $60 per ton, car lots, f.o.b. works.

BLEACHING POWDER—Supplies are reported adequate to meet demands, with drum shortage sometimes delaying shipments. Quotations are unchanged. Prices on bleaching powder range from $2.50 to $3.10 per 100 pounds, in drums, car lots at works.

CASEIN — Prevailing prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 33 cents per pound; 2,000 pounds, 33¼ cents per pound; less than 2,000 pounds, 33¾ cents per pound, f.o.b. shipping point. Sales at current ceiling on open billing effective August 15.

CAUSTIC SODA—Supplies tightest ever as market remains critical. Steel sheet shortage creates drum scarcity. Cutback production further reduces stock. Solid caustic soda is quoted at $2.30 per 100 pounds; flaked and ground is quoted at $2.70 to $2.95 per 100 pounds. All prices car lots.

CHINA CLAY — Domestic and English grades adequate to meet demands. Quotations remain unchanged. Domestic filler clay is currently quoted at from $8.50 to $9 per ton; coating clay is quoted at from $12 to $22 per ton, at mine. Imported clay is quoted at from $22 to $25 per long ton, ship side. All prices quoted in car lots.

CHLORINE—Demand continues to exceed production, stocks low, with little improvement in container supply. Quotations unchanged. Chlorine is currently quoted at $2.00 to $2.25 per 100 pounds, in single unit tank cars, f.o.b. works.

ROSIN—Gum rosin in drums, per 100 pounds net, in yard, New York. B, $7.50; D, $7.75; E & F, $8.45; G, H, I, K, M & N, $8.56; WG, $8.65; WW, $8.75. All prices in car lots, rosin in bags, 5c less.

SALT CAKE — Demand increasing with inventories showing no improvement. Prices remain unchanged. Domestic salt cake is quoted at $15 per ton, in bulk. Chrome salt cake is quoted at $16 per ton. All prices in car lots, f.o.b. shipping point.

SODA ASH—Supplies continue short, demand active, previous orders filled. Quotations continue unchanged. Current prices, car lots, per 100 pounds, are as follows: in bulk, $.95; in paper bags, $1.05; and in barrels, $1.35. Current boxcar shortage temporarily delays shipments.

STARCH — Supplies inadequate to meet demand. Previous orders filled. Starch prices continue unchanged. The pearl grade is quoted at $5.87 per 100 pounds; powdered starch at $6.02 per 100 pounds; both prices in bags, car lots, f.o.b. Chicago.

SULPHATE OF ALUMINA — Demand active, supply fair. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.20 per 100 pounds, in bags, car lots, f.o.b. works. The iron free is currently quoted at $1.75 to $2.00 per 100 pounds, in bags, at works.

SULPHUR—Strong seasonal demand is reported with stocks plentiful. Annual contracts are quoted at $16 per long ton, f.o.b. mines; the price f.o.b. at Gulf Ports is $17.50 per long ton. Prices in car lots. Some shipments temporarily delayed.

TALC—Domestic and French grades are moving in fair volume with prices steady. Domestic grades are currently quoted at from $16 to $30 per ton at mines; Canadian at $24 to $30 per ton. All prices on car lots.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March, 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract	$74.00	@	—
Sheets	75.00	@	—
Kraft—per cwt.—Carload Quantities Zone A, Delivered			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard bag	*4.75	"	—

* Prices for Standard Wrapping are for 40 lb. base weight; for Standard Bag for 30 lb base weight.

Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.20	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila 35 lb.	6.00	"	7.00
Boards, per ton—			
News	*58.00	@	—
Chip	*58.00	@	—
Sgl. Mla. Lt. Chip	*67.00	@	—
White Uat. Coated	*81.00	@	—
Kratt Liners 50 lb.	*74.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5 regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—White, Assorted Items

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.75@$46.75	$40.90@$48.00
100% Rag.	32.85 " 38.50	34.00 " 40.00
85% Rag	.... "	30.55 " 38.75
75% Rag	24.30 " 28.50	24.45 " 30.00
65% Rag	.... "	.... " ....
50% Rag	20.05 " 24.50	21.25 " 25.75
25% Rag	17.85 " 21.75	19.00 " 23.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers.. White, Assorted Items

	Bonds	Ledgers
No. 1	$12.00@$14.50	$13.15@$16.00
No. 2	11.25 " 13.75	12.25 " 15.00
No. 3	.... "	.... " ....
No. 4	10.60 " 13.00	11.75 " 14.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper

No. 1 Glossy Coated	$14.70	@$16.75
No. 2 Glossy Coated	13.75 "	15.50
No. 3 Glossy Coated	13.20 "	16.00
No. 4 Glossy Coated	12.80 "	14.50
No. 1 Antique (Watermarked)	11.35 "	12.75
No. 2 Offset	10.65 "	12.25
A Grade E. F.	10.60 "	12.00
A Grade S. & S. C.	11.00 "	12.50
B Grade E. F.	10.30 "	11.75
B Grade S. C.	10.70 "	12.25
C Grade E. F.	10.00 "	11.50
C Grade S. C.	10.40 "	12.00
D Grade E. F.	9.70 "	11.00
D Grade S. & S. C.	10.10 "	11.50

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers' Prices, Less Freight Not Exceeding OPA Allowances.

Bl. Softwood Sulphite	$103.50
Unbl. Softwood Sulphite	90.00
Bl. Hardwood Sulphite	100.50
Unbl. Hardwood Sulphite	87.50
N. Bleached Sulphate	103.50
S. Bleached Sulphate	97.00
N. Semi-Bleached Sulphate	98.00
S. Semi-Bleached Sulphate	91.50
N. Unbl. Sulphate	83.50
S. Unbl. Sulphate	76.50
Bleached Soda	93.50
Unbleached Soda	88.00
Groundwood	64.00
Ground—Machine Dried	67.00
Sulphite Screenings	50.00
Sulphate Screenings	44.00
Groundwood Screenings	37.50
N. Unbl. Sulphate Sideruns	83.50
S. Unbl. Sulphate Sideruns	76.50
Standard Newsprint Sideruns	64.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$12.50
Lake Central	12.50
Southern	15.00
West Coast (in area)	9.50
West Coast (out area)	15.50

	50%-80% Air Dry Weight
Northeast	$10.50
Lake Central	10.50
Southern	13.00
West Coast (in area)	8.50
West Coast (out area)	14.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$7.50
Lake Central	7.50
Southern	10.00
West Coast (in area)	6.50
West Coast (out area)	12.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

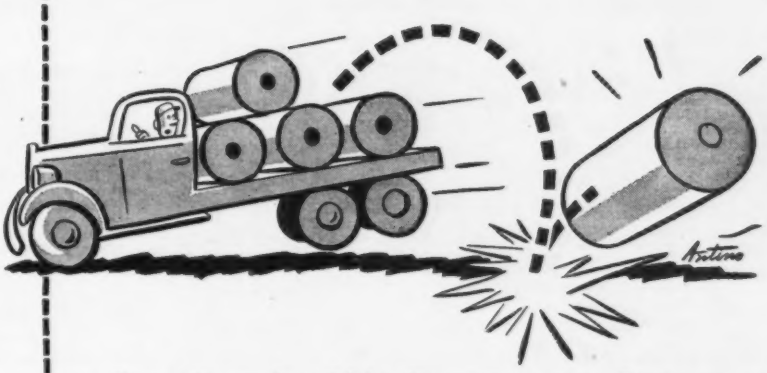
Domestic Rags

New Rags

(Nominal Prices Delivered to Mill + 5% Brokerage)

Shirt Cuttings—		
New White, No. 1	7.25 @	Nominal
Silesias No. 1	5.75 "	"
New Unbleached	7.50 "	"
Blue Overall	5.50 "	"
Fancy	3.50 "	"
Washables	3.00 "	"
Bleached Khaki Cutting	4.25 "	"
Unbleached Khaki Cuttings	3.50 "	"

Protect your rolls against HIGH VOLTAGE



Count the number of jolts the average paper roll gets on mill floors, loading platforms, freight cars, unloading docks, ships, trucks, warehouses, conveyors, and elevators. These are the shocks that crush rolls, spoil badly needed paper. MEAD CHESTNUT CORES offer high insurance against crushing. They are spirally constructed of Mead chestnut fibre, combining extra strength with hardness and durability. Send your own specifications for free samples for testing. No obligation, of course. *Then make your next carload . . .*

MEAD CHESTNUT CORES

THE MEAD CORPORATION · Lynchburg, Virginia

Kalamazoo Glazed Tile TANKS and CHESTS

Why experiment in tank construction when this proved, practical and dependable type of construction is now available?

The material that is enduring, clean and adaptable to any size or shape.

Consult Kalamazoo engineers for planning any type of tank or chest.

KALAMAZOO TANK & SILO COMPANY
KALAMAZOO · MICHIGAN

118 years of leadership

SERVING THE PAPER INDUSTRY

Right equipment — a better product at a lower cost. Look to Smith & Winchester's 118 years of leadership for the *right* equipment.

PAPER MAKING MACHINERY
PAPER BAG MACHINES
MODEL "E" UNDERCUT TRIMMER
JORDANS — FOURDRINIERS
WET AND CYLINDER MACHINES
ROTARY SPOT CUTTERS
REELS AND WINDERS
STUFF AND FAN PUMPS
ROLLS OF ALL KINDS

Bulletins furnished on request. We specialize on custom-built machinery to fit your particular needs.

The SMITH & WINCHESTER
Manufacturing Company
SOUTH WINDHAM, CONN.

Old Rags

White, No. 1—			
Repacked	3.80	@	Nominal
Miscellaneous	3.20	"	"
White, No. 2—			
Repacked	2.90	"	"
Miscellaneous	2.65	"	"
Thirds and Blues—			
Repacked	2.20	"	"
Miscellaneous	1.30	"	"
Roofing Rags—			
No. 1	1.55	"	"
No. 2	1.45	"	"
No. 3 (bagging)	1.35	"	"
No. 4	1.35	"	"
No. 5A	1.35	"	"
Old Manila Rope	5.75	"	"

Foreign Rags

(All Prices Nominal)

New Rags

New Dark Cuttings	6.00	@	Nominal
New Mixed Cuttings	6.50	"	"
New Light Silesias	5.75	"	"
Light Flannelettes	5.75	"	"
New White Cuttings	12.00-14.00		
New Light Oxfords			Nominal
New Light Prints	8.00-10.00		

Old Rags

No. 1 White Linens	8.50	@	Nominal
No. 2 White Linens	7.50	"	"
No. 3 White Linens			Nominal
No. 4 White Linens	3.25	@	Nominal
No. 1 White Cotton	4.75	"	"
No. 2 White Cotton	3.75	"	"
No. 3 White Cotton	3.00	"	"
No. 4 White Cotton	2.20	"	"
Extra Light Prints	2.40	"	"
Ord. Light Prints	5.50	"	"
Med. Light Prints	4.75	"	"
Dutch Blue Cottons			Nominal
French Blue Linens			Nominal
Checks and Blues	4.00	"	"
Linsey Garments	4.00	"	"
Dark Cottons	3.60	"	"
Old Shopperies	3.35	"	"
New Shopperies	3.50	"	"
French Blues			Nominal

BAGGING

(Prices to Mill, f.o.b. N. Y.)

Gunny No. 1—			
Foreign	4.00	@	Nominal
Domestic	3.30	"	"
Wool Tares, light	4.00-4.75		
Wool Tares, heavy	4.50	@	Nominal
Bright Bagging	3.50	"	"
Manila Rope—			
Foreign			Nominal
Domestic	5.75	@	Nominal
Jute Strings	4.50	"	"
No. 1 Sisal Strings	3.00	"	"
Mixed Strings	1.50	"	"

Waste Paper

Nominal Prices to Mills

(Dollars Per Ton)

F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	$67.50	@	—
No. 1 Hard White Envelope Cuts	62.50	"	—
No. 1 Hard White Shavings, unruled	57.50	"	—
No. 1 Hard White Shavings, ruled	50.00	"	—
Soft White Shavings, one cut	57.50	"	—
No. 1 Soft White Shavings	50.00	"	—
Soft White Shavings, Misc.	43.00	"	—
No. 1 Fly Leaf Shavings	33.50	"	—
No. 2 Fly Leaf Shavings	22.50	"	—
No. 1 Groundwood Fly Leaf Shavings	25.00	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	18.50	"	—
Mixed Colored Shavings	15.50	"	—
Mixed Groundwood Colored Shavings	18.00	"	—
Overissue Magazines	33.50	"	—
No. 1 Heavy Books & Magazines	38.50	"	—
Mixed Books	22.00	"	—
No. 1 White Ledger	46.00	"	—
No. 2 Mixed Ledger, colored	40.00	"	—
New Manila Envelope Cuttings, one cut	57.50	"	—
New Manila Envelope Cuttings	53.00	"	—
Extra Manilas	39.00	"	—
Mixed Kraft, Env. & Bag Cuttings	55.00	"	—
Kraft Envelope Cuttings	65.00	"	—
Triple Sorted, No. 1 Brown Soft Kraft	50.00	"	—
New 100% Kraft Corrugated Cuttings	45.00	"	—
No. 1 Assorted Old Kraft	35.00	"	—
New Jute Corrugated Cuttings	18.50	"	—
Old 100% Kraft Corrugated Containers	35.00	"	—
Box Board Cuttings	14.50	"	—
White Blank News	33.00	"	—
Overissue News	22.00	"	—
No. 1 News	20.00	"	—
No. 1 Mixed Paper	19.00	"	—
Old Corrugated	28.00	"	—
Mill Wrappers	22.00	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.26	@	—
White Hemp	.26	"	—
Fine Polished—			
Fine India	.31	"	—
Unpolished—			
Box	.20¼	"	—
Paper Makers	.20	"	—
Tube Rope	.22	"	—
Wall Paper	.23½	"	—
Wrapping	.26	"	—
Soft Fiber Rope	.22	"	—
Cotton	.28	"	—

(Hard Fiber)

Medium Java	.23	"	—
Mex. Sisal	.21	"	—
Manila	.33	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill)

Shirt Cuttings—			
New White No. 1	.07¾		
New White No. 2	.05¾		
Light Silesias	.05¾		
Black Silesias, soft	.03¾		
New Unbleached	.07½		
Washable Prints	.04¼		
Washable No. 1	.03		
Blue Overall	.05½		
Cottons—According to grades—			
Washable Shredding	.01¾		
Fancy Percales	.04¾		
New Black Soft	.03¼		
Khaki Cuttings—			
Unbleachable Cotton Cuttings	.03½		
Bleachable Cotton Cuttings	.04¼		
Men's Corduroy	.03½		
Ladies' Corduroy	.03		
Cottonades	.03¼		

Domestic Rags (Old)

White No. 1—Repacked	3.80	@	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	@	3.50
No. 1 Clean Bright—			
Sisal Strings	.04	"	—
No. 2 Clean Bright—			
Sisal Strings	.03	"	—
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares, heavy	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila.)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Ledger, colored	2.00	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Box Board Cuttings	.72½	"	—
Kraft Corrugated Cuttings	2.25	"	—
Old Corrugated Containers	1.40	"	—
Overissue News	1.00	"	—
No. 1 News	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	2.75	@	2.90
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	* —	"	4.00
Mixed Rope	1.60	"	—
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.50	"	5.00
Jute Carpet Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.00	"	3.25
South America	—	"	3.25
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Aust. Wool Pouches	—	"	3.65
New Zealand Wool Pouches	—	"	3.80
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Roofing Bagging	1.35	"	—

* OPA Maximum Prices.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¼	"	.05
New White No. 1	.06¾	"	.07
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06¾
Underwear Cutters, Bleached	.06¼	"	.06¾
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06¾
New Black Silesias	.03	"	.03¾
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06¾
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.03½	"	.03¾
Corduroy	.03¼	"	.03½
New Canvas	.06¼	"	.06¼
B. V. D. Cuttings	.06¼	"	.06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—*
Miscellaneous	3.20	"	—*
White No. 2—			
Miscellaneous	2.65	"	—*
Twos and Blues, Repacked	2.20	"	—*
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—*
Miscellaneous	1.80	"	—*
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—*
No. 2	1.45	"	—*
No. 3	1.35	"	—*
No. 4	1.35	"	—*
No. 5, Quality A	1.35	"	—*
Quality B	1.20	"	—*
Quality C	.95	"	—*
Old Manila Rope	5.75	"	—*

* OPA Maximum Prices.

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.30	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—

CHAS. T. MAIN, INC.
Consulting Engineers
201 Devonshire St., Boston, Mass.
PULP AND PAPER MILLS
Steam, Hydraulic and Electrical Engineering
Process Studies, Design, Specifications and Engineering Supervision
Reports, Consultation, and Valuations

HARDY S. FERGUSON & CO.
Consulting Engineers
200 FIFTH AVENUE, NEW YORK CITY
Hardy S. Ferguson.....Member A.S.C.E., A.S.M.E., E.I.C.
Reese H. Tenze.....Member A.S.M.E., E.I.C., A.S.C.E.
Consultation, reports, valuations, and complete designs and engineering supervision for the construction and equipment of
Pulp and Paper Mills and other Industrial Plants
Steam and Hydro-Electric Power Plants
Dams and Other Hydraulic Structures

SPEED OF CONSTRUCTION
MAY BE A VITAL FACTOR
CONSULT
MERRITT-CHAPMAN & SCOTT CORP. 17 BATTERY PLACE NEW YORK 4, N. Y.
PAPER MILL BUILDERS

GEORGE F. HARDY
Consulting Engineer to the Paper Industry since 1900
441 Lexington Ave., New York 17, N. Y.
Member—Am. Soc. C. E.—Am. Soc. M. E.—Eng. Inst. Can.
Consultation — Paper and Pulp Mills
Reports — Hydro-Electric and
Valuations — Steam Power Plants
Estimates — Plans and Specifications

FREDERIC C. CLARK
CONSULTING ENGINEER
BROAD EXPERIENCE IN MANUFACTURE OF PULP AND PAPER
SPECIALIST IN PLANT DESIGN
SURVEYS OF MILLS AND PROCESSES
CONSULTATION ON TECHNICAL PROBLEMS
7 DEY STREET NEW YORK, N. Y.

RODERICK O'DONOGHUE
CONSULTING ENGINEER
PULP MILLS — PAPER MILLS
IMPROVED PROCESSES — DESIGNS — REPORTS
420 Lexington Ave. New York City

THE MAYER MACHINE COMPANY, INC.
Manufacturers of
Paper Coating Machines
1155 Scottsville Road, Rochester 11, N. Y.
Waxing & Oiling, Carbon, Laboratory, Flat Ream Converting and Measuring and Roadmarking.

Appleton Wires are Good wires
APPLETON WIRE WORKS, INC. APPLETON, WIS.

AMYLIQ
the modern means for preparing coatings and tub-sizings from starch.
WALLERSTEIN COMPANY, INC.
180 Madison Avenue • New York 16

PENNOTEX OIL CORPORATION
29 Broadway
New York, N. Y.
AMORPHOUS WAXES
Melting Points 120° F. to 205° F.
For the Manufacture of
LAMINATING PAPER . . GLASSINES . . WATER-PROOFING . . GREASE PROOFING . . EXTENDERS FOR PARAFFIN, FOOD CONTAINERS, CONTAINER LININGS, ADHESIVENESS AND PROTECTIVE COATING.

MISCO "C"
THE CORROSION RESISTANT ALLOY
CAST • ROLLED • FABRICATED
for all equipment exposed to corrosion by sulphite acids
MICHIGAN STEEL CASTING CO., DETROIT 7, MICH.

Appleton Felts MAKE GOOD PAPER
APPLETON WOOLEN MILLS
APPLETON-WISCONSIN

K-121-B — DEINKING — DECOLORIZING and COOKING PROCESSES — K-C-2
THE KINSLEY CHEMICAL COMPANY
12500 Berea Road Cleveland, Ohio

INDUSTRIAL TYCOL OILS-GREASES
A COMPLETE LINE
OF TYCOL LUBRICANTS SCIENTIFICALLY ENGINEERED FOR EVERY INDUSTRIAL USE
Tide Water Associated Oil Co.
Eastern Division
17 Battery Place, New York, N.Y.

The CLEARING HOUSE

HELP WANTED—5c a word. Double rate for heavy face type. Minimum charge $1.25.
SITUATIONS WANTED—5c a word, double rate for heavy face type. Minimum charge $1.25. If repeated ½ rate will be charged for each consecutive repetition.

FOR SALE—5c a word. Double rate for heavy face type. Minimum charge $1.25.
WANTED—5c a word. Double rate for heavy face type. Minimum charge $1.25.
OPPORTUNITIES—5c a word. Double rate for heavy face type. Minimum charge $1.25.
Classified advertising space may also be purchased at $3.00 per single column inch.

All classified advertisements are payable in advance. If box number is used—25 cents additional.
Address replies to advertisements appearing under Box numbers in care of
PAPER TRADE JOURNAL, 15 West 47th Street, New York 19, N. Y.

Copy for Classified Advertisements must be in our office on Monday preceding publication

HELP WANTED

HELP WANTED

PAPER CHEMIST OR ENGINEER

We are the recognized leaders in our field, and still growing after more than 50 years of serving the paper industry.

In expanding our engineering staff we need a technically trained man, preferably between 28-35 years old, to act as an adviser and "trouble shooter" for our customers. He should understand papermaking from the beater to the reel. He should be the type who enjoys new contacts and makes friends easily—not the super-salesman type, but sincere, pleasant and diplomatic.

There is a great deal of travelling required but it is highly interesting work always.

Any paper mill engineer considering a change to a broader field should write us fully, and if possible enclose a snapshot of himself.

All replies will be kept absolutely confidential. We mention this particularly as we realize the man we are seeking undoubtedly is now employed and he can be sure nothing will be done to jeopardize his present position.

Address Box 46-649, care Paper Trade Journal.

S-26

CHIEF ENGINEER

To assume complete charge new power plant; progressive paperboard mill. Address Box No. 46-626 care Paper Trade Journal. O-3

PROCESS ENGINEER

Wanted

With wide experience in pulp and paper making processes. Must be able to develop flow diagrams and specify related equipment. Excellent opportunity for the right man. Please furnish complete experience record.
Address Box 46-261 care Paper Trade Journal. TF

WANTED—Bag Machine Adjustor. Must be thoroughly experienced and capable of operating a small Bag Mill in Mexico. Write fully to Monroe Collenberg, 74 Trinity Place, New York City. S-19

SALARIED POSITIONS

$2,500-$25,000. This thoroughly organized confidential service of 36 years' recognized standing and reputation carries on preliminary negotiations for supervisory, technical and executive positions of the calibre indicated. Retaining fee protected by refund provision. Identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, INC.
117 Dun Bldg., Buffalo 2, N. Y.

WANTED
TOUR BOSS

Experienced in Roofing Felt Mill operations, to be trained for Assistant Superintendent job in New Orleans Plant of long established nation-wide organization. Send complete resume giving experience, education, salary expected, etc., to Box 46-628 care Paper Trade Journal. S-19

CLASSIFIED ADS BRING RESULTS

HELP WANTED

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St., Boston, Mass.

Specializing in Paper Mill Personnel

Positions Now Open

Technical Director, Northern tissue mill
Plant Engineer, Mid-West, $5000-$5500 year
Mechanical and maintenance engineers, (New England) preferably technical graduates $4500-$5000
Plant Engineer (Canada) $400 month
Mechanical Engineer, technical graduate, (New Jersey) $5000-$6000
Superintendent, assistant superintendent and tour boss, cylinder, for felt and board mills in Canada
Chemists and chemical engineer
Plant Superintendent box board converting plant (Southern states)
Fibre board mill superintendent (Northern states)

We invite correspondence (strictly confidential) with paper and pulp mill executives seeking new positions and with employers seeking new personnel. S-19

Large Paper Convertor in New York City, well rated, interested in a man who has mill connections and trade. Will finance and back. Write details, etc. Box No. 46-647 care Paper Trade Journal. S-19

Wanted

Mill maintenance mechanics for paper mill. Must be experienced and willing to make Miami their permanent home. Address P.O. Box 66, Miami Springs, Fla. S-26.

Chemist on folding boards, required for our Stroudsburg, Pennsylvania plant. This position offers unusual opportunity for advancement. Please give complete experience and salary expected in first letter.

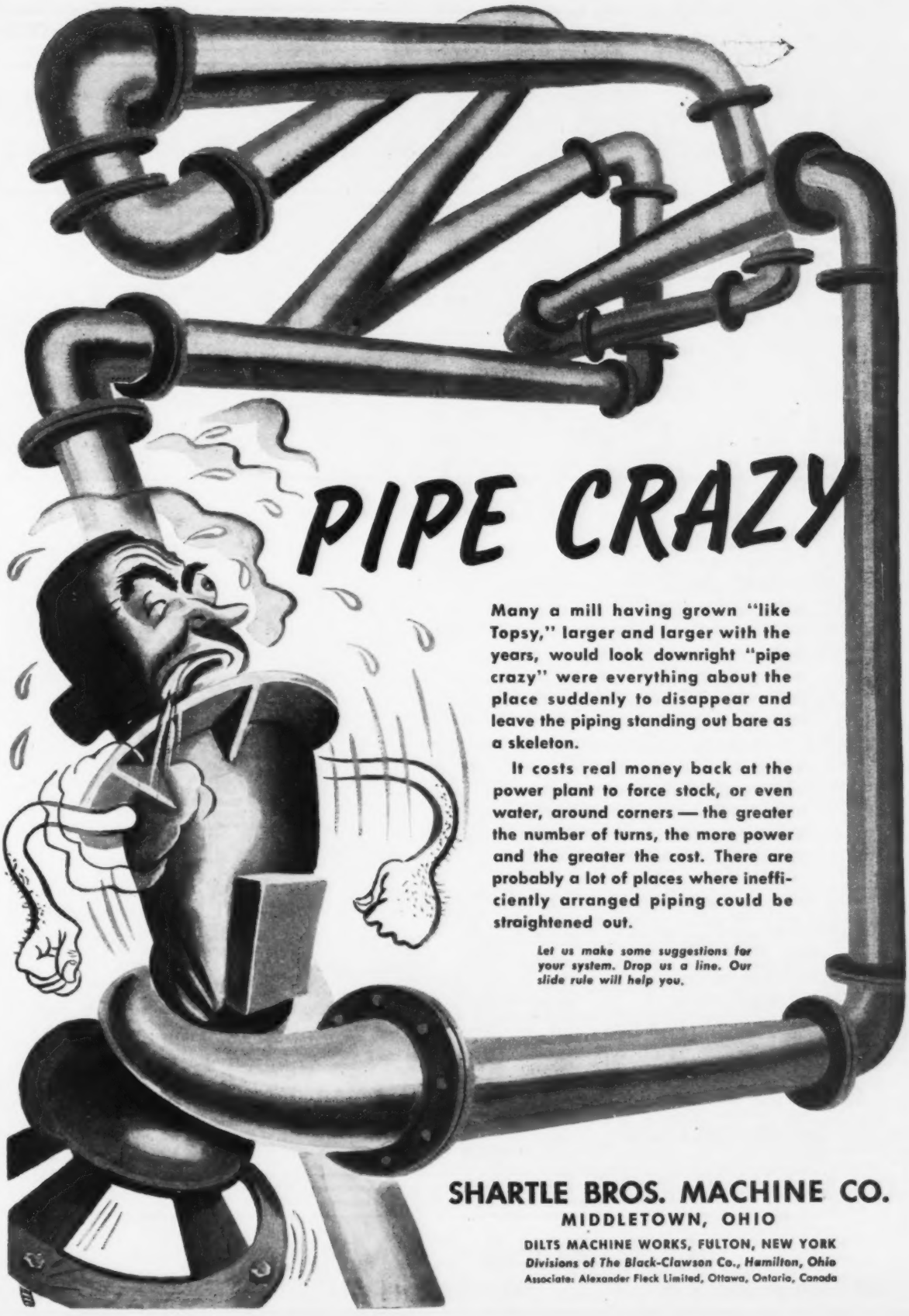
EMPIRE BOX CORPORATION
Garfield, N. J. S-19

PAPER MACHINERY ENGINEER

We need a competent engineer who knows paper machinery. This is a big job and will pay well. Location in the East. Any application will be held strictly confidential. Address Box 46-627 care Paper Trade Journal. S-26

WANTED—TOUR BOSS for prominent New England Mill with two board machines, manufacturing high grade folding box board. Permanent position. Write, giving age, qualifications and salary expected in first letter. Address Box 46-521 care Paper Trade Journal. TF

WANTED—Mechanical Engineer for maintenance also new construction by kraft pulp and paper mill on Pacific Coast: Good future for the right man. Address Box 46-624 care Paper Trade Journal. S-26



PIPE CRAZY

Many a mill having grown "like Topsy," larger and larger with the years, would look downright "pipe crazy" were everything about the place suddenly to disappear and leave the piping standing out bare as a skeleton.

It costs real money back at the power plant to force stock, or even water, around corners — the greater the number of turns, the more power and the greater the cost. There are probably a lot of places where inefficiently arranged piping could be straightened out.

Let us make some suggestions for your system. Drop us a line. Our slide rule will help you.

SHARTLE BROS. MACHINE CO.
MIDDLETOWN, OHIO

DILTS MACHINE WORKS, FULTON, NEW YORK
Divisions of The Black-Clawson Co., Hamilton, Ohio
Associate: Alexander Fleck Limited, Ottawa, Ontario, Canada

HELP WANTED

WANTED—5 young engineers to travel throughout United States and Canada to call on Paper and Pulp Mills. Can earn up to $6,000 per year. Write stating age, experience and qualifications. Address Box 46-637 care Paper Trade Journal. S-19

GUMMING SUPERVISOR—Wanted by large well established paper converter. Should have practical experience in production of gummed paper and cloth tapes and gummed specialty papers. Give full details of qualifications and experience. Address Box 46-612 care Paper Trade Journal. D-19

SITUATIONS WANTED

PAPER MANUFACTURERS ATTENTION

Broad experienced paper maker, Fourdrinier and Cylinder, middle aged, responsible, pleasing personality, specializing as individual in ironing out manufacturing or labor difficulties in confidential manner. Compensation one thousand dollars plus expenses per month. Address Box 46-623 care Paper Trade Journal. S-19

SITUATIONS WANTED

GENERAL SUPERINTENDENT

SOUTHERN KRAFT

25 years experience both pulp and paper

Presently meeting specifications on ASPHALTING, CEMENT SACK, SATURATING and other converting grades. Available on 60 days notice. Salary $12,000. Address Box 46-597 care Paper Trade Journal. S-19

YOUNG EXECUTIVE AVAILABLE

for Production or Technical Assistant. Chemical Engineer, over nine years experience in research, development, control and all phases of production of book, writings, specialties. Alert, responsible, constantly abreast new developments. Age 30. Desirable living accommodations for family essential. Eastern or Southern location preferred. Available sixty days. Address Box 46-634 care Paper Trade Journal. S-19

ENGINEER will be available for new assignment November first on consulting or temporary employment basis. Broad experience in felt, board, asphalt roofings and allied products. New construction, modernization, operation and economic problems. Will prepare Studies, reports, plans, specifications and supervise entire projects. Address Box 46-644 care Paper Trade Journal. O-10

SITUATIONS WANTED

SUPERINTENDENT—30 years experience in light weight crepe tissues and towels. Capable of production and all maintenance on cylinder, Yankee pickups and Fourdrinier machines. References furnished. Address Box 46-619 care Paper Trade Journal. S-19

MILL REPRESENTATIVE covering the jobbing and direct trade for the past 15 years from Pennsylvania through to the Carolinas, now desires to operate over the same territories with 2 or 3 non-conflicting lines. What have you to offer? Address Box 46-412 care Paper Trade Journal. TF

INSTRUMENT ENGINEER desires position as staff instrument engineer with a large pulp and paper mill. Graduate engineer with eight years experience in process instrumentation. Two years directly connected with the pulp and paper industry. Address Box 46-567 care Paper Trade Journal. O-3

FOR SALE

BEATERS
1—2000 lb. Holyoke-Iron Tub Beater.
2—1200 lb. E. D. Jones (no tubs).
1—1000 lb. Dayton Beater (no tub).
1—1600 lb. Stout & Mills Iron Tub Beater.
1—400 lb. Gavit—iron tub beater.
1—Breaker Beater—Dilts Bandless Roll 62" diameter x 54" face—70 tons daily capacity. Equipped with Shartle Bros. Ragger.
1—Breaker Beater—New Perforated Backfall—48" face roll x 54" diameter—no tub.

BLOWERS
2—Buffalo Forge Company—Size 7—Duplex Conoidal steel plate Blowers. Ball bearing.

CALENDER STACKS
1—5 roll 84" face—Farrel.
1—6 roll—72" face.
1—7-roll 36" Holyoke Machine. (supercalender)

CENTRAP
1—Shartle Brothers Centrap.

COATING MACHINE
1—26" six roll coating machine.

CYLINDER MOULDS
1—30" diameter x 74" face.
2—30" diameter x 54" face.
1—30" diameter x 75" face.
1—36" diameter x 84" face.

DOCTORS
14—Dillon Doctors—complete with accessories—98" face.

DRIVES
4—Smith & Winchester Drives.
1—Moore & White mortise gear drive.
1—D. O. James 75 H.P. Speed Reducer with couplings and motor base. Ratio 2.16 to 1. 900 RPM to 418 RPM.
7—D. O. James Angle Drives—11 to 1—12 to 18 h.p.

DRYERS
1—28" diameter x 76" face.
1—48" diameter x 94" face.
1—24" diameter x 84" face. (Baby)
3—36" diameter x 64" face, with frames gears and bearings.
2—25" x 120" (Baby Dryers).
1—30" x 120".
1—48" x 100".
3—36" diameter x 38" face.

ERKENSATORS
1—L. W. E. Erkensators—bronze construction—complete with motors, starters and distributing box.

FLAT SCREEN
1—4 plate Flat Screen.

HYDRAULIC PRESSES
1—Lake Erie Engineering Co., 78 ton, platen 12" x 12".
1—Watson Stillman, 60 ton, platen 14" x 14", with triplex pump and motor.

JORDANS
1—No. 2 Miami Jordan.
1—No. 9 Emerson Jordan—for direct connection to a motor.
1—Noble and Wood, Monarch, new fillings.

LABORATORY EQUIPMENT
2—Mullen Testers.

MOTOR
1—25 h.p. motor, including starting equipment.

PRESS ROLLS (Rubber Covered)
1—27¾" diameter x 186" face.
1—26" diameter x 185" face.

PULP EQUIPMENT
1—32" three pocket Glens Falls Grinder (for 27" wood).
1—4 knife Carthage Chipper, with 2 sets of spare knives.

PULP SCREEN
1—IMPCO centrifugal pulp screen design No. 3.

PULPER
1—Jones Pulper.

PULVERIZER
1—Erie coal pulverizer.

PUMPS
1—No. 4 Connersville Vacuum Pump.
1—6 x 2L Connersville Vacuum Pump.
1—No. 7 Sturtevant Vacuum Pump.
1—Buffalo Pump—5500 g.p.m. direct connected to 100 H.P. Motor (50' head).
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

RAG CUTTER
1—Taylor Stiles, 14", Little Giant.

REDUCERS
2—Westinghouse Gear Motors—25 h.p.—115 output r.p.m.—3/60/440.

REELS
1—72" Downingtown Expansion Reel.
1—2 Bowl Reel — 112" face — bowls 20" diameter.
1—2 Bowl Reel—110" face.
1—Set Stack Reels, capacity trim 143".

ROLLS
500—Brass tube—steel tube—rubber covered iron rolls—various sizes.

ROTARY SCREENS
3—Moore & White Rotary Screens (alternating diaphragm type).

SAVEALL
1—Saveall 36" diameter x 96" face cylinder mold. (With iron end vat.)

SCREW PRESS
1—Valley Iron Screw Press.

SCREEN PLATES
36 plates—43 x 11 1/16"—.050 cut—bevel edges.
24 plates—Recently recut .008.
12 plates—Recently recut .035.
Also other sizes and cuts in stock.

SHREDDERS
1—No. 25 CRSE Mitts & Merrill Hog.
1—Gilman Shredder.
1—Waterville Shredder.

SHEETERS
1—84" Finlay Sheeter, Erie Layboy and 9 roll backstand.
1—128" Moore & White Sheeter with layboy.
1—48" Langston heavy duty chopper (this is a combination machine, combining a slitter, scorer, sheeter and chopper.)

SLITTERS AND WINDERS
1—52" Johnstone Slitter & Winder.
1—36" Beck Razor Blade type Slitter & Winder.
1—60" Moore & White Slitter and Winder set for 5½" slits.
1—60" Moore & White Slitter and Winder set for 7/16" slits.
1—120" Moore & White 4 drum slitter.
1—80" 2 drum Warren Winder.

STOCK PUMPS
1—12 x 20 Triplex Shartle.
1—8 x 18 Duplex Friction Co.
1—10 x 12 open impeller. (All lead).
Numerous other Centrifugal Stock Pumps Advise as to your requirements.

SUCTION BOX
1—Nash 100" face Suction Box.

TOILET AND TOWEL MACHINES
1—65" Towel Machine.
1—85" Toilet Machine.

V-BELT DRIVES
1—{23" diameter x 14" face, 10 grooves.
{15" diameter x 14" face, 10 grooves.

WET MACHINE
1—74" Moore & White.

We are always in the market to purchase your surplus or idle machinery. What have you to offer? Wanted Cylinder and Fourdrinier Machines (complete mills).

J. J. ROSS COMPANY

250 Frelinghuysen Ave. **Tel.—Bigelow 3-3720** **Newark 5, N. J.**

TELEPHONE
HUMBOLDT 2-2177

CABLE ADDRESS: JACK ROSS

ROSS PAPER MACHINERY CO.

265 PASSAIC STREET
NEWARK 4, N. J.

CONVERTING
PAPER MAKING EQUIPMENT

NEW, USED, REBUILT
PAPER AND PULP MACHINERY

JACK ROSS, President

1—Shartle Brothers 2 cylinders—120" machine. (Can supply four additional cylinders and vats). Machine includes:—2 pairs of baby presses, 3 pairs of primary presses, 2 pairs of main presses, 27 dryers 36" diameter x 115¼" face—3 deck—spare cylinder mould and couch. Drives, stands, line shaft and pulleys. Blue prints available.

1—Farrel Birmingham 16" Asphalt Extruder Complete.—Used 7 months.

AIR HOISTS
2—Two-Ton Ingersoll Rand
2—Five-Ton Ingersoll Rand

BEATERS
4—1000 lb. Horne Iron Tub.
1—1200 lb. Holyoke Wood Tub
3—Valley Iron 750 lbs. Iron Tub Beaters, with Silent Link Belt Drive.
2—2000 lb. Valley Iron with wood tubs—like new.
1—1200 lb. Noble and Wood—no tub. Spare new fillings for roll.

BIRD SCREEN PLATE
17 Plate—60 cut. New condition.

BLEACHERS
2—Fletcher high density bleachers—used 3 months.

BLOWERS
1—American ball bearing blower, size 17" x 23" for motor drive.
1—American Blower, size 40. For belt drive.

CALENDER DOCTORS
1 set of 16 Warren Doctors 104" face with frames.
60 Warren Doctors—various sizes.

CALENDER ROLLS
30 rolls various sizes

CALENDER STACKS
1—6 roll Beloit, 110" face.
2—2 roll Holyoke 38" face.

CONVERTING EQUIPMENT
2—Sanitary Napkin Machines. With motors and starters.
1—Bliss Double Head Stitcher.
1—Waterville Grinders.

COUCH ROLLS
2—18" diameter x 92" face—brass covered.
3—20" diameter x 92" face—brass covered.

CREPING MACHINE
1—Complete Bagley & Sawali Creping Machine. Dryer 100" face x 48" diameter. Ball bearing equipped. Used 6 months.

CYLINDER MOLDS
1—Impco—84" face—40" diameter with stainless steel face wire
2—110" face x 36" dia.
1—90" face x 36" diameter—with ball bearings and cast iron end vats.
4—84" face x 36" diameter.
4—Cylinder Molds—cast iron end vats—cylinders 120" face x 36" diameter. Ball bearing.

DANDY ROLLS
2—122" face 10" dia.
1—138" face 12" dia.
1—129" face 9½" dia.

DRIVES
1—Falk 25 h.p.—7.5 to 1.—1750 r.p.m.

DRYER DOCTORS
40—Warren Doctors. Various sizes.

DRYERS
38—48" Dia. x 46" Face, Chromium Plated.
2—24" Dia. x 46" Face.
2—36" diameter x 72" face with gears and steam joints.

ELECTRIC HOIST
1—Sprague Electric 3 ton hoist—5 h.p. 3 phase —60 cycle—110 volts.

FLAT SCREENS
3—Harmon 16 plate.
6—Harmon 10 plate.
1—8 plate Sandy Hill Packer—roller shoes.
1—Sandy Hill 2 plate flat screen.

FOURDRINIER SHAKES
1—Beloit Fourdrinier Shakes.
1—Sandy Hill Bertram Shake. Late type.

FOURDRINIER WET END
1—120" Beloit Fourdrinier Wet End.
1—74" Pusey & Jones Wet End.

GRANITE ROLLS
2—112" face 20" diameter.

HAMMERMILLS
1—American Hammermill—37" anti friction bearing equipped.
1—Williams 18" Hammermill Ball Bearing.

HOG
1—Mitts & Merrill Hog. Number 5Z52.

JORDANS
1—Noble & Wood Mammoth Junior.
2—E. D. Jones Majestic Jordans, with one new set of fillings for both plugs and shell—belt driven.
2—#2 Miami Jordans—motor driven.
2—E. D. Jones Imperial Jordans—belt driven.

LINE SHAFT
1—Complete line shaft with pulleys and pillar block.

MISCELLANEOUS
2—Nugent Oil Filters (new).

PLATERS
2—Holyoke 2 Roll 18" dia. 36" face.

PULLEYS
60—Cone Split and Solid Cast Iron Pulleys. Various Sizes.

PULP SCREENS
4—Wells Screens.
6—Trimbey Screens.

PULP EQUIPMENT
1—128" face Kamyr Press.
1—84" Sumner Disc Barker with motor.

PULPERS
1—Voith Pulper 20 tons cap.
1—Bird Pulper.

PUMPS
4—Worthington Pumps 10,000 g.p.m.—35' head. Requires 75 h.p. at 550 r.p.m.
1—DeLaval 6" x 6".
1—DeLaval 1800 g.p.m. 30' Head, 900 r.p.m.—8" Suction—10" Discharge, Ball Bearing—Belt Driven—or for Direct Connection to Motor. Open Impeller.
9—Worthington Close Coupled Centrifugal Pumps. 6" x 6" 650 g.p.m. 25' head. 6 h.p. Star Electric splash proof motor. 1750 r.p.m. 440 volt, 3 ph.-60 cycle, ball bearing.
18—Warren Vertical Pumps. 6" suction. 5" discharge. 135 g.p.m. 60' head. Direct Connected 6 h.p. General Electric motor. 1750 r.p.m. 440 volts, 3 ph.-60 cycle, ball bearing.
1—Warren Close Coupled Centrifugal Pump. 3" suction, 2" discharge. 60 g.p.m. 90' head. 6 h.p. General Electric 1750 r.p.m. 440 volts, 3 ph-60 cycle, ball bearing. All the above pumps and motors are in excellent condition and are of bronze construction.
2—Worthington 3", 2 stage, 200 g.p.m. 224' head. Bronze Ball Bearings.
1—Worthington 400 g.p.m. 35' head 1750 r.p.m. Ball bearing.
1—15" Buffalo—4000 g.p.m.—70' head. For direct connection to motor.
2—La Bour Company self priming ball bearing pumps. 2½" suction, 2½" discharge. 150 g.p.m.—30" head with extended base for motor.
1—Domestic Pump ball bearing—250 g.p.m., 4" suction, 3" discharge—30' head with extended base for motor.
295 additional pumps in our warehouse—various sizes.

REELS
1—Black-Clawson 2 Bowl—120" face. Takes 36" diameter roll.

REFINERS
1—Weiner Refiner 24" with extended base for direct connection to motor.

ROLLS
40—Table, Dress, Felt, Wire, Breast and Calender Rolls. Various Sizes.

ROTARY COOKER
1—Rotary Cooker—9' dia. x 21' long—complete with drive.

ROTARY SCREENS
2—#2 Bird with copper vats.
2—#1 Bird with steel vats, lead lined.
4—Moore & White.

RUBBER PRESS ROLLS
1—185" Face—26" Diameter } Used 20 Days
1—186" Face—27½" Diameter }
1—119" Face—19½" Diameter.
1—189" Face—17½" Diameter.
1—120" Face—19" Diameter.
1—118" Face—18" Diameter.
1—129" Face—18" Diameter.
1—107" Face—18" Diameter.
1—100" Face—18¼" Diameter.

SAVEALLS
1—A. D. Wood cylinder 48" dia. 60" face.

SCREW PRESS
1—Valley Iron Screw Press. Used 2 years.

SHEETERS
1—96" Hamblet Duplex.
1—90" Beloit Single Knife heavy duty.

SHREDDERS
2—24" Sprout Waldron heavy duty shredders—anti friction bearing equipped.
1—Taylor Stiles Portable Pulp Shredder—on wheels.
1—Ryther and Pringle Shredder.

SLITTERS AND WINDERS
1—162" Four drum Moore & White Winder.
82" Warren two drum—fully rebuilt.
1—41" Waldron Slitter and rewinder. Roll embossing attachment.

STEAM LOCOMOTIVES & WOODLAND EQUIPMENT
1—32 ton 36" gauge Shay-Lima locomotive. Air pressure 150 lbs. P.S.I. with a large lot of new spare parts.
1—40 ton 36" gauge Improved Climax Locomotive. Boiler pressure 150 lbs. P.S.I. with a large lot of new spare parts.
30—36" gauge wood cars. 40,000 lbs. log or pulpwood capacity. Used 4 months.
1—Sheffield motor car, manufactured by Fairbanks Morse—36" gauge—New.

STUFF PUMPS
1—12" x 20" Shartle triplex.
2—4" x 10" Shartle Duplex direct connected to 3 h.p. gear head motors.

SUCTION BOXES
4—Brass Suction Boxes—119" face—8" wide—adjustable.
1—Brass Suction Box—126" face—8" wide—adjustable.

SUPERCALENDER STACKS
1—7 roll Norwood 52" face; 3 paper and 4 iron rolls. 1 new spare paper roll.
1—9 roll Norwood 83" face. Bottom roll 24" diameter. Top roll 20" diameter.

TURBINES
1—Westinghouse 125 h.p. 125 steam pressure—15 back pressure. Complete. Used 1 year.

TURBINES—PAPER MACHINE DRIVE
2—General Electric Turbine Paper Machine Drive 250 h.p.—350 r.p.m. 125 lb. steam pressure 30 lb back pressure.

UNWINDERS
1—42" John Waldron Unwinder. Used 1 year.

VACUUM PUMPS
3—14" x 20" Connersville.

WET MACHINES
1—76" Pusey & Jones Cylinder Mould, 70" face —36" diameter with rubber couch. 18" vats
2—Glens Falls 84" Wet Machines—cylinder mold 48" diameter with 18" rubber couches.
2—Glens Falls 84" Wet Machines—cylinder mold 36" diameter with 18" rubber couches.

YANKEE DRYERS
2—Beloit 8' dia. x 175" face—75# working pressure.
1—Beloit 5' dia. x 194" face—75# working pressure.

THE ABOVE IS A PARTIAL LIST OF EQUIPMENT OFFERED FOR SALE.
NO CONNECTION WITH ANY OTHER FIRM OF SIMILAR NAME.

SITUATIONS WANTED

CHEMICAL ENGINEER—Top flight, with 15 years valuable experience directing research on pulp, paper, board, specialties and mill equipment, available for responsible job in production or technical direction. Address Box 46-616 care Paper Trade Journal. S-19

EXECUTIVE ASSISTANT — Graduate chemical engineer, age 32, with 9 years experience in paper chemicals from laboratory to paper mill service, desires executive experience. Address Box 46-613 care Paper Trade Journal. S-19

CHEMIST with wide experience in paper coating field, including printing and laminating operations, seeks position in coating or allied field. Available in near future. Address Box 46-625 care Paper Trade Journal. S-26

FINISHING DEPARTMENT SUPERVISION. Years diversified practical experience, Cutting, Rewinding, Programing, Bond, Book, Kraft, Tissues, Waxed, Specialties, Converter considered. Address Box 46-618 care Paper Trade Journal. S-26

TECHNOLOGIST with executive experience. Degree in Pulp and Paper. Experience in research, production, sulphite, tissue, newsprint, kraft, condenser. Technical sales or production desired. Address Box 46-639 care Paper Trade Journal. S-26

EXECUTIVE—Twenty-five years in supervisory and managerial work, mostly in successful operation of mill manufacturing a highly specialized board. Good labor relations—thorough knowledge of board mill equipment. Record and references furnished. Address Box 46-640 care Paper Trade Journal. S-26

PURCHASING AGENT—Fifteen years Pulp and Paper Mill, also woods operation purchasing experience and prior engineering education and experience, desires make change to position offering opportunities and salary commensurate with abilities. Address Box 46-648 care Paper Trade Journal. O-3

FOR SALE

FOR SALE

1—Dilts iron tub beater. Roll 62 x 54. Tub 24′ long.

Box No. 46-632 care Paper Trade Journal. S-19

1—84″ Hudson Sharp roll-to-roll Embossing machine, embosses from two rolls at a time; with engraved rolls for "basket weave" and, "ribbed" patterns.

3—Lockport flat and square Bag Machines making bags from 4 to 24 lbs.

2—Two color Kidder Rotary Bag Presses. Sizes 24″ x 48″ and 36″ x 48″. For printing small and large make-up bags and sacks.

1—30″ Late type Model D Fales Slitter and Rewinder equipped with knife setups to cut following widths: ¾, 9/32, 5/16, 11/32, ⅜, 13/32, 7/16 and ½ inches.

1—68″ Type 40B Hudson Sharp Toilet Paper Converter. Perforates 5″ lengths toilet or 10″ paper towels.

6—S.O.S. Grocery Bag Machines making 1 lb., 2 lbs., 3 lbs., & 10 lb. each, and one making 7 & 8 lb. bags.

1—84″ 3 shaft Model 30B Hudson Sharp Toilet Paper Perforator cutting sheets 4½ x 5, 4½ x 4½, 11 x 15, 11 x 13½, 11 x 7½ inches. Known as a hard wound roll machine.

4—Complete spiral tube winders with automatic cut-offs, also recutter. 2 Langston and 2 Knowlton manufacture.

GIBBS-BROWER COMPANY, INC.
21 East 40th St., New York 16, N. Y.
TF

FOR SALE—48″ Inman Heavy Duty Slitter and Rewinder with approximately 40 sets of knives, 3 h. p. motor, v-belt drive. Minnesota Paper and Cordage Co., 730 Washington Ave., No., Minneapolis, 1, Minnesota. O-10

FOR SALE

FRANK H. DAVIS CO.,
ESTABLISHED 1889
USED AND REBUILT PAPER MACHINERY.

FOR SALE

BARKERS
1—48″ Waterville
BEATERS
2—Holyoke 66 x 60, iron tub
1—2000 lb. Horne, iron tub Broke Beater new 1941, roll bandless 60 x 48
1—Horne patent 60 x 60, bronze bars
CALENDER
Set of 124″ rolls, bottom 22″; 2-16″; 8-12″
CUTTERS
1—110″ Hamblet duplex
1—84″ Clark with Moore & White layboy
1—63″ Smith & Winchester undercut
1—Taylor Stiles rag cutter
1—Daniels rag cutter
DECKERS
1—30 x 95 Black & Clawson
1—30 x 74″ Impco
3—Apmew Filters, mould 50″ x 100″
DRYERS
1—6′ x 86″; 1—6′ x 102″; 1—6′ x 106″
2—8′ x 175″; 1—5′ x 194″ new 1939
EMBOSSERS
1—80″ Hudson Sharpe Embossing Machine
FANS
2—Buffalo double turbo 6½ Conoidal forced draft fans
JORDANS
2—Union Standard for motor drive
1—N & W Pony Monarch
1—Claflin #2
FOURDRINIER PARTS
1—Rice Barton, wire 100″ x 31′, rebuilt with 2 Reeves drives
1—Pusey & Jones, wire 133″ x 61′ 2″, running at 500 F P M
1—48″
1—22 x 104 Suction couch.
1—14½ x 86″ Suction couch.
LOCOMOTIVE
1—Alliance, also 7000 feet of 60 lb. track with connections
MIXER AND COOKER
1—25 gallon cooker #75
PULPERS
1—#1 Lannoye
2—Jones with Falk reducers and motors 440 volts, 3 phase, 60 cycle
1—Lannoye #2
PUMPS
1—10 x 10 Beloit triplex
2—10 x 12 Deane
1—#7 14 x 20 Roots vacuum pump, bronze fitters
SCREENS
2—Bird #2
2—Moore & White #2
1—Leith Walk
4—12 plate Packer
2—10 plate Impco flat, bronze vats, new 1940
6—14 plate Impco flat, bronze vats, new
2—6 plate; 1 roller shoe
4—New 10 plate, Witham vats
2—New 8 plate, Witham vats
SHREDDERS
2—Mitts Merrill #15 C.F. direct cont. to 125 H.P. 440 v. motor
1—Waterville
1—Carthage
1—Rythor & Pringle
Mitts Merrill type 14A P E S #C 19026
SLITTERS
1—150″ Moore & White four drum
1—120″ Kidder two drum
1—114″ Moore & White four drum, wids 60″ roll
1—84″ Bagley & Sewall
1—50″ Cannard
1—26″ Kidder two drum
1—115″ four drum.
WASHERS
2—2000 lb. Union Mach. steel tubs

Builders of
ASPHALT COATING, COMBINING MACHINE, GUMMING AND CREPING MACHINE, ROLL GRINDER
FRANK H. DAVIS COMPANY
175 Richdale Ave., Cambridge, Mass.
TF

FOR SALE

50″ wide Cannard surface winder and slitter which has arrangement for removing completed roll and starting new roll at low speed without stopping. Will wind rolls up to 48″ diameter. No unwind stand included. Used 2 years. $1000 F.O.B. our plant.

H. P. SMITH PAPER CO.
5001 W. 66th St., Chicago 38, Illinois
S-19

FOR SALE

REVAMPING AND REBUILDING MILL AND CAN OFFER FOR SALE

1—Noble & Wood Mammoth Jr. Jordan ¼″ Filling. Now operating.
1—Brass covered finishing press roll—17¾″ diameter x 89½″ face.
1—4000# Capacity motor driven freight elevator with automatic stop control—can be inspected in operation at our plant.
1—6″ Lawrence Centrifugal Water pump.
2—6″ Barnes Centrifugal Sewage Pumps.
8—100″ Screen plates for No. 2-A Bird Screen. Slots, .022—never used after being recut once.
1—Rubber covered press roll 12″ diameter by 68″ face—Journals 5″ diameter by 7¼″ long.
1—Rubber covered press roll 12″ diameter by 84¼″ face—Journals 5″ diameter by 7¼″ long.
1—20″ face cast iron tapered pulley—2 15/16″ Bore, Taper 31″-29½″.
2—20″ face cast iron tapered pulley—3 7/16″ Bore, Taper 31″-30″.
1—24″ face cast iron tapered pulley—3 7/16″ Bore, Tapered 31⅝″-29⅝″.
2—Steel split pulleys 60″ diameter by 31″ face —5 15/16″ bore.
1—Cast iron split pulley—60″ diameter by 21″ face by 3½″ bore.
1—Cast iron split pulley—40½″ diameter by 21″ face by 3½″ bore.
1—Cast iron split pulley—84″ diameter by 30″ face by 5 15/16″ bore.
1—Cast iron split pulley—72″ diameter by 18″ face by 18″ face by 8⅝″ bore.
2 —Steel split pulleys—60″ diameter by 41″ face by 5 15/16″ bore.
1—Paper pulley—24″ diameter by 21″ face by 4½″ bore.
1—Tapered cast iron split pulley. Taper 30″ to 28½″ by 20″ face by 3 15/16″ bore.
1—30″ x 90″ Cylinder mould—7″ diameter shaft inside cylinder.
1 9½″ diameter x 85″ Face Rubber-covered squeeze or wringer roll-Journals 1 15/16″ diameter.
1—9″ diameter x 88″ Face Calender roll—9″ diameter journals.
12—6½″ dia. x 92″ face steel drier felt rolls with 1 7/16″ x 6¼″ Journals.
2—4″ Gould centrifugal stock pumps with 2 vane open impeller. Capacity 600 G.P.M. at 40′ head—1175 R.P.M. with 10 H.P. Operated less than two years.
2 —Pair Noble & Wood lighter stands complete with lighter beams and bearings for 8″ diameter journal beater roll.

A visit to the mill would prove profitable as we have many items for sale too numerous to mention. See our superintendent, Mr. O. P. Fussell at our plant in Walloomsac, N. Y.

WALLOOMSAC PAPER MILLS, INC.
Mills: Walloomsac, New York
Main Office: 25 Vanderbilt Avenue
New York 17, N. Y. TF

FOR SALE

Barrett - Craven and Lewis - Shephard Lift Trucks, in excellent condition, 3,500# and 5,000# capacities, 7″ high in lowered position, 3″ and 4″ lifts.

EMPIRE BOX CORPORATION
Garfield, New Jersey
TF

FOR SALE—One Manual Control Direct Feed Ammonia Apparatus Type M.D.P.A. Capacity 100 lbs. 24 hours. Price $300.00 FOB mill. Used, but in good condition. Address Box 46-630 care Paper Trade Journal. S-26

FOR SALE—44″ Seybold Cutter, guaranteed to be in good operating condition. Address Box 46-650 care Paper Trade Journal. S-19

FOR SALE | FOR SALE | FOR SALE

TARENTUM PRODUCTS CORP.

TARENTUM, PENNSYLVANIA

1—Majestic Jordan #A-235, complete with new filling, 3/16" tackle, No. 6 Fast Jordan Coupling, and following drive:

1 Westinghouse Induction Motor type CS 375 HP 2300 volts 3 phase 60 cycles 97 amp. 380 RPM Ser. #1463196 complete with one control panel, including one Westinghouse 300 amp. Oil Circuit Panel.
1 set Disconnect Switches.

1—Westinghouse DC Motor 75 HP 230 volts 265 amp. 575 RPM Frame 183 Ser. #4778560. Complete with starting control, circuit breaker and motor.

1—Elliott Water Pump, capacity 500 gallons per minute, serial #37075. Direct connected to one G.E. Motor 25 HP D.C. Type CD 85-230 91.3 amps 1750 RPM Ser. #1530365. Complete with one starting control and switch.

1—Westinghouse Generator 70 KW 250 volts DC 280 amp. 375 RPM Ser. #345451 with one Field Rheostat, one two-pole circuit breaker 600 amp., one Westinghouse 500 amp. ameter and shunt. This Generator driven by Buckeye Steam Engine, 100 lbs. steam pressure engine #5156.

1—2000 KW A.C. Turbine Generator complete with all accessories.

1—Allis-Chalmers Induction motor 250 HP 870 RPM 2200 volts, 3 ph 60 cy 59 amp. Serial #2K13566.1.

1—G.E. Induction Motor type KT 326-8-25-1200 Form B 3 ph 60 cy 220 volts 25 HP 61 amp. 1200 RPM Ser. #1053934 complete with one G.E. OIL Switch type F Form K20 80 amp 600 v Ser. #368400.

1—G.E. Starting Compensator CR1034 220 volts 3 ph 60 cy type NR 1622.

1—G.E. Induction Motor (slipring) Frame 15A 150 HP Form M 720 RPM 2200 v. 3 ph 60 cy 36 amp Ser. #1180132.

1—G.E. Induction Motor (slipring) Frame 15A 150 HP Form M 720 RPM 2200 v. 3 ph 60 cy 36 amp.

1—Westinghouse 30 HP D.C. Motor 220 volts 117 amp. 975 RPM Ser. #233501.

1—G.E. Motor DC Type MP Form H 20 HP 1025 RPM 220 volts 70 amp. Ser. #19880, complete with manual starting equipment.

1—104" Sheet Cutter complete with stands for 10 rolls, and laybey.

1—G.E. Motor DC Type RC30 Form A 15 HP 850 RPM 230 volts 53.5 amp. Ser. #957750, complete with variable speed control for armature and field.

1—G.E. Motor DC 7.5 HP 230 volts 30.2 amp 850 RPM Type RC-29A Form A29 Ser. #1145541.

1—G.E. Motor DC 10 HP 230 volts 375.1 amp 850 RPM Type RC 29 Form A29 Ser. #1148660.

1—Westinghouse DC Motor Type S 5 HP 220 volts 21 amp. 1300 RPM Ser. #112692.

1—G.E. Motor DC 35 HP 120 amp. 230 volts 700 RPM DLC 202 Form A Compound Ser. #434542, complete with starting control.

1—G.E. Induction Motor (slipring) Type IE 13AA-4-150-1800 FORM M 3 ph 60 cy 2200 volts 150 HP 34.5 amp 1745 RPM Ser. #3884576 complete with panel. One G.E. Switch Panel type ATI 59008, one Drum Controller and Resistance variable speed.

1—Master Electric Worthington Pump and Motor. Pump is good for 100 gal. per minute 5 HP Motor 230 volts DC 3425 RPM Ser. #CC-3495.

1—Robbins & Myers Hoist ½ HP 230 volts DC 400 RPM Ser. M71309KH.

1—Master Electric Gear Head Motor 1 HP 230 volts DC 1725 RPM Ser. CE863.

1—Shepard Liftabout Electric Hoist 2,000 lb. capacity 230 volts DC Serial #11339.

1—Wright Electric Hoist 1,000 lb. capacity 230 volts DC 1200 RPM Ser. #27668.

3—ILG Ventilating Fans ¼ HP 230 volts DC 855 RPM.

2—G.E. CP27 Compressor Head Air Pumps 230 volts DC Complete with pressure line switches.

1—Allis-Chalmers DC Motor 5 HP 220 volts 1050 RPM Ser. 44837.

1—Westinghouse DC Motor 10 HP 40 amp. 230 volts 1725 RPM Frame 80L Ser. #143833.

1—Daniels Rag Cutter #2.

1—Horizontal Rotary Digester 7' dia., 22' long with gearing reduction.

1—Horizontal Rotary Digester 8' dia., 20' long with gearing reduction.

1—Bucket type conveyor elevator. Buckets size 5" x 17", approximately 48' long, lifts on incline approx. 15'. All steel construction with Rex Chain Drive, complete with one Foote Bros. gear reducer type 25W 43 to 1 ratio, ser. 188052, driven by one G.E. DC Motor type RC27A Form A-38 5 HP 19.1 amp 230 volts 1150 RPM.

1—R40 Reducer, 12 to 1 ratio.

1—Slipring motor 75/150 HP Type CW 3 ph 60 cy 2200 volts 290/580 RPM Ser. #2224679, complete with starting equipment.

1—Slat conveyor steel construction 4' wide, 3' high, 42' long, driven by one Jones Spur Gear Reducer, ratio 27 to 1, Ser. #10135. Driven by one Sprag Electric DC Motor type LC 10 HP 37.2 amps 230 V 100 RPM Ser. #DL 2005213, complete with sheaves and V Belt drive, one Westinghouse Automatic Starter.

1—John Waldron Embosser #711.

1—Thorpe Hydraulic Press complete with 4 steam platen plates 40" x 40", and one Equalizer Pump.

1—Five cylinder Holyoke Duster.

1—Two-color Kidder Rotary Press, with various plates and printing rolls.

3—Beaters, 1000 lb., cast iron tub, complete with roll.

2—Beaters, high speed, 2000 lb., cast iron tub, complete with roll.

1—Banded type Emerson Beater Roll, 54" face, 56" diameter, complete with stands.

MISC.

Platform Scales.
Paper Testing Equipment.
Two-wheeled hand trucks.
One Shartle Bros. Duplex Stock Pump 8 x 16.

TF

FOR SALE

40—SETS NEW 2 TON YALE & TOWNE SPUR GEARED HIGH SPEED CHAIN HOIST, BALL BEARING EQUIPPED, SPECIAL 20 FT. LIFT CHAINS.

10—SETS NEW 3 TON WRIGHT HIGH SPEED CHAIN HOISTS, SPUR GEARS, ANTI-FRICTION BEARINGS, SPECIAL 20 FT. LIFT CHAINS.

1—Sturtevant Bale Pulper, just taken out of service where it pulped 60 to 75 tons Kraft Pulp daily. Excellent condition.

3—Shartle cast iron tub breaker beaters or washers, roll 80" dia. 55" face, anti friction bearings. Used less than one year.

1—Dilts 2000# new tye cast iron tub beater with keyed type bandless roll, 66" x 60", also one hexagon type washing cylinder.

1—Horne type 1800# wood tub beater with roll 54" dia., 60" face, 4" cypress tub used less than 5 years. A bargain.

1—Valley Iron Works breaker beater roll, 67". dia., 60" face with new staggered bars, bearings, hood etc. all very good.

2—Dillon No. 1 Jordans, belt driven type.
1—Weiner Refiner, very good condition.
1—Shartle Cyclifiner, new fillings, pin type coupling.
1—No. 2 Bird Screen, copper lined vat.
3—12 Plate flat screens, fully reconditioned.

1—36 x 90" Cylinder Mould with anti-friction bearings also cast iron vat end packing box assembly.

2—Black Clawson Wet Machines with cylinders 30" x 74", new vats, balance fully reconditioned.

4—Pairs New Shartle Press Housings (never installed) equipped with anti-friction bearing ratchet lifts.

5—Pairs Press Rolls (1 brass, 1 rubber covered) 16" dia. 77" face.

1—Set 1st and 2nd Press Sections including frames, stretches, felt rolls, press rolls, etc. for 68" machine. These are very good equipment.

1—48" dia. 120" face Dryer.
1—112" Langston Slitter and Winder equipped with rider roll, will make rolls up to 60" dia.

1—106" Pusey & Jones two-drum Slitter and Winder, 16" dia. drums, will wind rolls to 54" dia., fully reconditioned.

1—Bagley & Sewall tissue machine Reel, 136" face, 5' dia. spool, complete with stands, and frictions. These reels were in use on machine until August of this year.

1—Beloit 2-spool upright reel, drums 126" face, 18" dia. 3 ft. 4" between drums, will make rolls 60" dia. These are modern, extra heavy type.

1—88" two-drum Bagley & Sewall Warren type Slitter and Winder (fully reconditioned).

3—Agitator Drives for vertical agitator. All enclosed gear speed reducing unit for chest approximately 12 ft. dia. 10 or 12 ft. deep.

1—10" x 20" Shartle Triplex plunger stock pump fully reconditioned.

3—Marshall Angle Drives built by Moore & White with double gear reduction and M. & W. frictions.

2—10" x 11" Beloit Triplex Stock Pumps.
1—Frederick open impeller centrifugal stock pump, 12" inlet, 10" outlet, 1800 GPM, 75 ft. head at 1150 RPM.

2—Domestic open impeller stock pumps, 240 GPM, 40 ft. head, 1750 RPM.

1—DeLaval Centrifugal water pump, 1550 GPM 60 ft. head, 1750 RPM.

2—Ingersoll-Rand centrifugal pressure pumps, 500 GPM, 104 ft. head, direct connected to 20 HP G. E. motors, 3 phase, 60 cycle, 220 or 440 volts (like new).

4—New Gould all bronze centrifugal water pumps, 2000 GPM 150 ft. head, 1150 RPM (Navy surplus).

4—New Gould Pumps, 10,000 GPM 100 ft. head, all bronze casings, stainless steel shafts, monel metal sleeves, 100 HP motors, 1200 RPM (Navy surplus).

3—16" dia., 88" face rubber couch rolls, approximately 200 plastometer, 1⅝" to 2" rubber.

The largest stock of miscellaneous rolls, such as brass breast rolls, brass couch rolls, press rolls rubber covered and brass covered, and calender, rolls available anywhere.

"Every pound of paper is made on used equipment".

OSBORNE PAPER MILL EQUIPMENT CO.

FULTON, N. Y.

S-19

FOR SALE

GOOD VALUES FOR THE PAPER MILL

68" Rice, Barton, Fales Slitter-Rewinder.
80" and 110" Mill Type Sheeters.
34" Inman Slitter.
54" Brown & Carver Power Cutter.
29" x 41" Miehle Cutter & Creaser.
No. 5-A Standard 2-rod Embosser.
2—14" x 22" John Thomsons.
Robinson Double Corner Cutter.
American heavy duty Cross-Cut Saw.
Baling Presses—NEW—Hand and Power.

THOMAS W. HALL COMPANY, INC.
120 West 42nd St., New York 18

FOR SALE

2—Dilts iron tub beaters Bandless rolls 56 x 48. Very good for felt.

SHARTLE BROS. MACHINE CO.
Middletown, Ohio
S-26

FOR SALE

48" Meisel Spot Sheeter with Layboy
64" Waldron Drum Rewinder
44" x 64" Sheridan Die Cutter Model #25
Hayssen Heat Seal Carton Wrapper
28" x 38" Seybold Embosser & Die Cutter
63" & 74" Langston Cut-Off Knives
30" x 50" Cottrell Die Cutter
36" Rotary Printer, Sgle. Color

Write for bulletin listing 70 machines for paper converting and box manufacturing now available.

SOUTH WABASH ENGINEERING CO.
2929 S. Wabash Ave., Chicago, Illinois
O-10

FOR SALE

New brass covered felt or wire rolls 6⅝" dia., 84 to 120" face. These are made from government surplus and are new in all respects.

Osborne Paper Mill Equipment Co.
Fulton, N. Y. **TF**

FOR SALE

BREAKER BEATER

1—Dilts Bandless Roll 62" diameter x 54" face—70 tons daily capacity.
Equipped with Shartle Bros. Ragger.

1—Valley Iron Beater — New Perforated Back Fall — Beater roll 48" face x 54" diameter. (Newly Filled)—No tub.

J. J. ROSS COMPANY
250 Frelinghuysen Ave., Newark 5, N. J.
Tel. Bigelow 3-3720 **S-19**

FOR SALE—Cellophane. Available in small cut size sheets, either moistureproof or plain. Fairly prompt delivery. Address Box 46-603 care Paper Trade Journal. TF

FOR SALE—One 38" two color Rotogravure Press. Sheet feed and pile delivery. Practically new. Address Box 46-541 care Paper Trade Journal. TF

FOR SALE

PAPER COATING MACHINERY — Waxing, Oiling, Gumming, Gluing, Carbon, Laboratory Coating and Treating Machines. High speed New improvement. MAYER MACHINE COMPANY, Inc., 1156 Scottsville Road, Rochester, 11, N. Y. TF

FOR SALE—Bag Machines, square and flat types. Can be seen in operation. Address Box 46-646 care Paper Trade Journal. S-26

FOR SALE—1 Hamilton-Corliss Variable Speed Twin Engine, size of cylinders 12" x 24". Also Triple-Deck Frames for ninety 36" dryers, any width. The Chesapeake Paperboard Co., Baltimore 30, Md. TF

WANTED

WANTED

Board Machine complete, six cylinder 92 inches to 100 inches trim.

Dryers—Up to 90;—36 inch or 42 inch, 96 inches to 106 inches face. Address Box 46-642—Paper Trade Journal. S-19

WANTED

Complete heavy duty paster or laminator of approximate 65" face for boxboard. Must have stands with heavy duty cut-off knife and slitter arm all in good condition. Write full details to Rockford Paper Mills, Inc., Rockford, Michigan.
O-10

WANTED

2—1800 or 2000 lb. Beaters, preferably 1—right hand and 1—left hand in good condition. Address replies to Purchasing Department, Certain-teed Products Corporation, 120 South La Salle Street, Chicago 3, Illinois. S-19

WANTED

Side rolls odd lots of any kind of paper in rolls 12½" and wider. Any color. Preferably white. Also printed with any design. All grades.

CONTACT GEORGE S. BLEYER
Bleyco Paper Corp.
214 Sullivan St., New York, #12
S-19

WANTED TO BUY

A Folding Box Bd. Machinery

or

A complete Folding Box Bd. Paper Mill. All correspondence held in strict confidence. State size and price. Address Box 46-643 care Paper Trade Journal. S-19

WANTED

WANTED

One or two wet machines. Width from 72" up. Either single press or Rogers. Box No. 46-633 care Paper Trade Journal. S-19

"We Urgently Need Immediately for Export 5000 Tons or More of Newsprint Paper in Rolls or Sheets. Wire or Write Offer to Box No. 46-607 care Paper Trade Journal. S-19

WANTED—Three or four color rotary press for printing paper bags; and one half barrel bottomer. Must be in good condition. Give full details. Address Box 46-587 care Paper Trade Journal. TF

WANTED—Brightwood Box Machine. Address Box 46-33 care Paper Trade Journal. TF

WANTED — W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic Presses, Sheridan Presses, Dryers. Address Box 46-32 care Paper Trade Journal. TF

WANTED — DISCARDED PAPER MILL FELTS. HIGHEST PRICES paid for all kinds of discarded paper mill felts. LARGE or SMALL QUANTITIES accepted. Prices quoted immediately on receipt of samples. ADDRESS: GLASER AND YOFFE, INC., 80 NORTH MAIN ST., NATICK, MASS. TF

WANTED—Special lots, side-runs or over-runs Printing papers, or Wrapping papers — Bond, Kraft, Tissue, Board, Index, Offset, etc. Send samples, sizes and prices. Address Box 46-611 care Paper Trade Journal. S-26

WANTED—One complete Wet-end, 60" to 70" wide with 4 or 5 Cylinder Moulds or Vats. First and second Press rolls and all necessary stands. York Paper Mfg. Co., P. O. Box 189, York, Pa. S-19

WANTED—Large lots of paper folding boxes —styles—Staude Glued—No Lox Simplex—etc. Send samples—information and best price. Address Box 46-615 care Paper Trade Journal. S-12

WANTED—Roll Grinder for rolls up to 132" face and 30" diameter. Must be in good condition. Motors to be 3/60/440. Address Box 46-638 care Paper Trade Journal. N-7

WANTED—One dryer 60 inch dia. x 52 to 60 inch face, preferably with bearings and gear. Address Box 46-641 care Paper Trade Journal. S-26

WANTED—Larke diameter dryer, 132" face or somewhat larger, diameter preferably six or seven feet. Fort Howard Paper Company, Green Bay, Wisconsin. O-10

WANTED—Cameron or Langston Winder in good condition. Width 68" to 76". Address Box 46-645 care Paper Trade Journal. S-26

SALES AGENCY

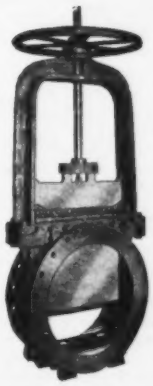
PAPER MANUFACTURERS AGENTS, catering to department and chain stores, entire world, beautiful display showroom in Fifth Avenue, New York, desires paper items suitable for world distribution. House Products Corp., 225 Fifth Ave., New York, N. Y. O-10

PULP MILL MACH'Y **FINISHING ROOM MACH'Y**
FRICTION CLUTCHES

The MOORE & WHITE CO.
PHILADELPHIA, PA.
N. PHILA. STA. PENNA. R.R.
PAPER MILL MACHINERY

STEAM TURBINES
HELICAL GEARS
WORM GEARS
CENTRIFUGAL BLOWERS AND COMPRESSORS
CENTRIFUGAL PUMPS
PROPELLER PUMPS
CLOGLESS PUMPS
MIXED-FLOW PUMPS
DE LAVAL-IMO OIL PUMPS

DE LAVAL STEAM TURBINE CO.
TRENTON 2, NEW JERSEY



RECORD PAPER & PULP STOCK VALVES "BONNETLESS SELF CLEARING" - - - "RESIDUE POCKETLESS TYPE"

METALS — I.B.B.M.. all iron, bronze or stainless steels, body parts plain or rubber lined.

The photo of 24" Fig. 241 I. B. B. M. valve while illustrating the gate bottom wedge system for forced gate seating and "GUILLOTINE" edge for shearing fibre at seat also shows the packing box and yoke as separate units. Both adjustable.

- The "FAST THREADED" screw stem and ball bearing speeds valve operation.
- The packing box is extra deep, is adjustable and provided with specialized lubricated packings and special type gland and compression bolts.
- The yoke mountings are such that yokes for various methods of gate operation are interchangeable.
- Replaceable gate edge shoes are used in valves 10" and larger. These shoes are of special value when valves are installed stem and pipe horizontal.

"RECORD PRODUCTS EXTENSIVELY USED IN DEFENSE PROJECTS."

RECORD FOUNDRY & MACHINE COMPANY
LIVERMORE FALLS, MAINE, U. S. A.

CAMACHINE 18

Operates smoothly at speeds up to 2000 FPM on paper 1200 FPM on board handles widths from 73" to 162"

WRITE FOR FOLDER

CAMERON MACHINE COMPANY
61 POPLAR STREET · BROOKLYN 2, N.Y.

THE McPHERSON COMPANY
GREENVILLE · SOUTH CAROLINA
MCO
Industrial Engineers

INDUSTRIAL SURVEYS · PLANT SITE INVESTIGATIONS · PLANS
COMPLETE PLANT DESIGNS · APPRAISALS · VALUATIONS · LABOR
SAVING STUDIES · RESEARCH & REPORTS · PROCESS ANALYSIS

The Trade-Mark of
DEPENDABLE FELTS

The Waterbury Felt Co.
SKANEATELES FALLS, N. Y.

SCREENS
of Perforated Metal

The Harrington & King PERFORATING Co.

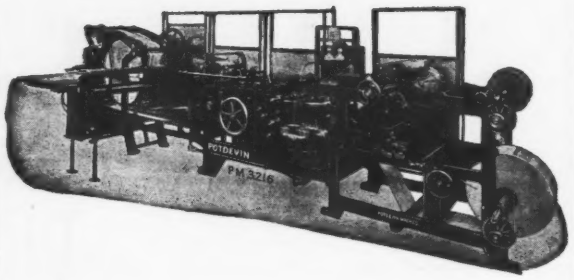
5652 Fillmore St., Chicago 44, Ill. 114 Liberty St., New York 6, N. Y.

ENGLISH ECCO CLAYS TRADE MARK **CLAYS**

UNIFORM SUPERIOR DEPENDABLE

English China Clays Sales Corporation
551 Fifth Avenue, New York City

POTDEVIN



SELF-OPENING—SQUARE

DUPLEX COFFEE BAG MACHINERY

Aniline & Oil Ink Presses, Waxing, Gluing, Varnishing and Laminating Machines.

POTDEVIN MACHINE CO.
EST. 1893
1223 38TH ST BROOKLYN, N.Y.

POTDEVIN

51-B
TOILET
WINDER

Designed for Economy Speed Quality

A SURVEY of production records indicates that our 51-B post-war winder is "tops." Space forbids telling our entire story here, but a request from you will bring more detailed illustrations and complete descriptive information.

HUDSON-SHARP
MACHINE CO • GREEN BAY • WIS

WHERE TO BUY

ABRASIVES
Monsanto Chemical Co.
Norton Co.
Raybestos-Manhattan Inc. Manhattan Rubber Division

ADHESIVES
American Anode Incorporated
American Resinous Chemicals Corp.
Arabol Mfg. Co.
Flintkote Company
Monsanto Chemical Co.
National Adhesives Division of National Starch Products, Inc.
Philadelphia Quartz Co.
Stein, Hall & Co., Inc.
United States Rubber Co.

AGITATORS
Appleton Machine Co.
Biggs Boiler Works Co.
Dilts Machine Works, Inc.
Dorr Company
Downingtown Mfg. Co.
Hardinge Co., Inc.
Improved Paper Machy. Corp.
E. D. Jones & Sons Co.
D. J. Murray Mfg. Co.
Montague Machine Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.

AIR CONDITIONING
Spray Engrg. Company
Steamaire Company

ATOMIZERS
Steamaire Company

BAG MACHINES
Potdevin Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Weber, Herman G.

BALING MACHINES
Thomas W. Hall Co.

BARKERS AND CHIPPERS
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Carthage Machine Co.
Fibre Making Processes, Inc.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

BARS
Dilts Machine Works, Inc.
E. D. Jones & Sons Co.
The Moore & White Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BEARINGS
Black-Clawson Company
Jones, E. D., & Sons Co.
Magnus Metal Corp.
Montague Machine Works
Raybestos-Manhattan Inc. Manhattan Rubber Division
Rollway Bearing Co.
Shartle Brothers Machine Co.
SKF Industries, Inc.
Timken Roller Bearing Co.
Valley Iron Works Co.
T. B. Woods' Sons Company

BEATERS & JORDANS
The Appleton Machine Co.
Black-Clawson Company
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Hermann Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
J. J. Ross Company
Ross Paper Machy. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works

BED PLATES
Bahr Brothers Mfg. Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BELTING
Alexander Brothers
Allis-Chalmers Mfg. Co.
The Cincinnati Rubber Mfg. Co.
Raybestos-Manhattan Inc. Manhattan Rubber Division
J. E. Rhoads & Sons
United States Rubber Co.
T. B. Wood's Sons Company
Worthington Pump & Machy. Corp.

BLEACHING BOILERS, ROTARY
The Biggs Boiler Wks. Co.

BLEACHING APPARATUS
The Biggs Boiler Works Co.
Improved Paper Machy. Corp.
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
Noble & Wood Machine Co.
Pennsylvania Salt Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.

BLOW PIPES & PITS
Carthage Machine Co.
Montague Machine Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

BOILERS
Babcock & Wilcox Co.
Biggs Boiler Works
Foster Wheeler Corp.

BOILERS (Electric)
Steamaire Company

BOTTOMS
Harrington & King Perforating Co.
Kalamazoo Tank & Silo Co.
Valley Iron Works Co.

CALENDERS
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell Car Wheel Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works
Waldron Corp., John

CASEIN
The Borden Company
Casein Company of America

CASTINGS
Appleton Machine Co.
Black-Clawson Company
Carthage Machine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Grinnell Company
Hamblet Machine Co.
Hardinge Co., Inc.
E. D. Jones & Sons Co.
Lobdell Car Wheel Co.
Magnus Metal Corp.
Montague Machine Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Union Machine Company
Union Screen Plate Co.
Valley Iron Works Co.

WHERE TO BUY

Walworth Company

CENTRIFUGAL MACHINERY
Bird Machine Co.
De Laval Steam Turbine Co.
Nichols Engrg. & Research Corp.
Ross, J. O., Eng. Co.
Shartle Brothers Machine Co.
Williams Apparatus Co.

CHEMICALS
American Anode, Incorporated
Amer. Cyanamid & Chem. Corp.
Amer. Resinous Chemicals Corp.
Ansul Chemical Co.
Calco Chemical Co.
The Cowles Detergent Co.
Diamond Alkali Co.
Dispersion Process, Inc.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
Falls Chemical Products Co.
General Dyestuff Corp.
Geigy Co., Inc.
Gottesman & Co.
Hooker Electrochemical Company
Mallinckrodt Chemical Wks.
The Mathieson Alkali Works, Inc.
Monsanto Chemical Company
National Oil Products Co.
Naugatuck Chemical Div. of U. S. Rubber Co.
Niagara Alkali Company
Paper Makers Chemical Department, Hercules Powder Co.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pioneer Salt Company
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
United States Rubber Co.
Witco Chemical Co.
Wyandotte Chemicals Corp.

CLEANING MATERIALS
Amer. Cyanamid & Chem. Corp.
Bird Machine Co.
The Cowles Detergent Co.
E. I. du Pont de Nemours & Co., Inc.
Paper Makers Chemical Department, Hercules Powder Co.
Magnus Chemical Co.
Monsanto Chemical Co.
Nichols Engrg. & Research Corp.
Oakite Products, Inc.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
Wyandotte Chemicals Corp., J. B. Ford Division

CLUTCHES
Appleton Machine Co.
Black-Clawson Company
Hudson Sharp Machine Company
Farrel-Birmingham Co.
Fawick Airflex Co., Inc.
Hardinge Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Wks.
Stearns Magnetic Mfg. Co.
T. B. Wood's Sons Company

COATING MACHINERY
Hudson Sharp Machine Company
Mayer Machine Co.
Moore & White Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.
Waldron Corporation, John
Weber, Herman G.

COCKS, LUBRICATED PLUGS
American Car & Foundry Co.

COMPRESSORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
Ingersoll-Rand Co.
Nash Engineering Co.
Worthington Pump & Machy. Corp.

CONDENSERS
Foster Wheeler Corp.

CONSULTING ENGINEERS
Frederic C. Clark
Ferguson, Hardy S.
Hardy, George F.
Alvin H. Johnson & Co., Inc.
The Kohler System Company
Main, Inc., Chas. T.
The McPherson Company
Roderick O'Donaghue
The Rust Engrg. Co.
J. E. Sirrine & Co.
South Wabash Engrg. Co.
Stone & Webster Engrg. Corp.

CONTROLLERS
Black-Clawson Co.
Cochrane Corp.

CONTROLS
The Bristol Company
Cochrane Corp.
Stickle Steam Specialties Co.

CONVEYORS
Black-Clawson Company
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O.

COOLING SYSTEMS
Foster Wheeler Corp.
Steamaire Company

CORES
Elixman Paper Co.
Rodney Hunt Machine Co.
Montague Machine Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.
Walker-Goulard-Plehn Co.

COUPLINGS
Black-Clawson Company
De Laval Steam Turbine Co.
Farrel-Birmingham Co., Inc.
Hardinge Co., Inc.
E. D. Jones & Sons Co.
Lovejoy Flexible Coupling Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John
Westinghouse Electric Corporation
T. B. Wood's Sons Company

CRANES
Northwest Engrg. Co.
Reading Chain & Block Company

CRUSHERS
Fibre Making Processes, Inc.

CUTTERS
Dilts Machine Works
Thomas W. Hall Co.
Noble & Wood Machine Co.
Perkins & Son, Inc., B. F.
The Smith & Winchester Mfg. Co.
South Wabash Engrg. Co.
Taylor Stiles & Co.

DAMPENERS
Perkins & Son, Inc., B. F.
Steamaire Company
Valley Iron Works Co.

DE-INKING
Dilts Machine Works
Hardinge Co., Inc.
Kinsley Chemical Co.
Shartle Bros. Mach. Co.

DIGESTERS
Biggs Boiler Works Co.
Foster Wheeler Corp.
Pusey & Jones Corp.

DOCTORS
Bird Machine Company

LET

LITHCOTE

(COATING & LINING)

★BEAT CORROSION

★CUT DE-SLIMING COSTS

in YOUR plant

Lithcote is the new, long-lasting, acid-resistant coating that's putting an end to many paper mill corrosion problems. Plant records show substantial economies on Lithcote-treated pipe-lines and equipment. In de-sliming savings alone, Lithcote puts these plants way ahead in terms of time and dollars.

Smooth, baked-on, glass-like Lithcote (a phenol formaldehyde synthetic resin) is a lasting defense against slime accumulation in white-water and stock lines. Applied to Fourdrinier parts, Lithcote effectively eliminates corrosion around the wet-end of the machine. Existing lines, parts, and tanks reclaimed and conserved with Lithcote, last indefinitely.

Lithcote protection can reduce shutdowns throughout your mill in:
WHITE WATER LINES • STOCK LINES • PIPE FITTINGS • SCREEN BODIES • SCREEN COVER PLATES • DECKER BODIES • SPIDER SEGMENTS • FILTER BODIES • C. I. END PLATES • SAVEALL BODIES • STOCK CHESTS • AGITATORS • PROPELLERS • SHAFTS • STUFFING BOXES • WALL FRAMES • PUMPS • IMPELLERS.

Write to Bedford Development Corporation for factual details and case histories. Lithcote may be applied in our plant or we will send a trained crew to your plant for coating or lining equipment too large for shipping to us.

BEDFORD DEVELOPMENT CORP.
230 PARK AVENUE • NEW YORK 17, N. Y.
Sales Representatives for
LITHGOW CORPORATION • CHICAGO

West Virginia Pulp and Paper Company

230 Park Ave.
New York

35 East Wacker Drive
Chicago

Public Ledger Building
Philadelphia Pa.

503 Market St.
San Francisco, Cal.

Manufacturers of

ENGLISH FINISH BOOK
SUPERCALENDERED BOOK
and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing, Mimeograph, Ledger, Eggshell, Cover and Music Papers, Index Bristol, Post Card and Label Papers, Machine Coated

HIGH GRADE COATED BOOK

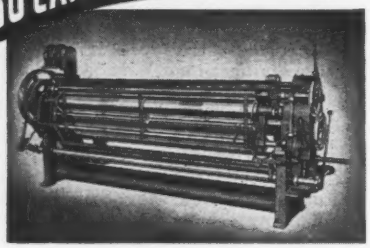
• • • •

KRAFT WRAPPING AND KRAFT ENVELOPE
KRAFT LINER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

MILLS:

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

ONLY ONE OF A LINE OF CONVERTING MACHINES YOU CAN DEPEND ON....



★ Backed by years of successful experience to the industry.

★ CREPE MACHINES Tissue, Kraft, Waterproof.

★ BUNDLING PRESSES. Adjustable, Napkin, Multi-Wall Bag.

★ MISCELLANEOUS. Toilet Roll Wrappers, Vacuum Pumps, Seat Cover Machines, Die Inkers, Core Machines, Core Recutters.

NOW is the time to anticipate your converting machinery requirements. We offer you a line of machines you can depend on.

PRINTING PRESSES
Rotary, Oil Ink, Aniline Multi-color, Arctype, In Series, Bag and Notion Envelope.

FOLDERS
Towel, Tissue, Napkin, Wax, Facial Tissue, Table Covers.

EMBOSSERS
1. Glassine. 2. Board. 3. Towel. 4. Tissue 5. Napkin. 6. Wrapping. 7. Special Purpose

WINDERS
Toilet, Towels, Crepe, Jumbo Roll.

Write us any time about your machinery requirements.

PAPER CONVERTING MACHINE CO.
GREEN BAY, WISCONSIN

WHERE TO BUY

Black-Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Lodding Engineering Corp.
Montague Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.

DOCTOR BLADES
Black-Clawson Company
Lodding Engrg. Corp.
Montague Machine Co.
Raybestos-Manhattan Inc.
Manhattan Rubber Division
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers
United States Rubber Co.
Westinghouse Electric Corporation

DRIERS
Black-Clawson Company
Murray Mfg. Co., D. J.
J. J. Ross Company
Ross, J. O., Engineering Corp.
Ross Paper Machy. Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black-Clawson Company
Davis, Frank H., Co.
De Laval Steam Turbine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
General Electric Company
Rodney Hunt Machine Co.
Montague Machine Co.
Moore & White Co.
Murray, D. J., Mfg. Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
T. B. Wood's Sons Co.
Valley Iron Works Co.
Westinghouse Electric Corporation

DRUMS
Fibre Making Processes, Inc.

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
Fibre Making Processes, Inc.
E. D. Jones & Son Co.
Moore & White Co.
Noble & Wood Machine Co.
Norwood Engrg. Co.
D. J. Murray Mfg. Co.

DYESTUFFS
Calco Chemical Co.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuff Corp.
National Aniline Division, Allied Chemical & Dye Corp.
Paper Makers Chemical Department, Hercules Powder Co.
C. K. Williams & Co.
Witco Chemical Co.

EMBOSSING ROLLS
Northern Engraving & Mch. Co.
Roehlen Engraving Works

EVAPORATORS
Black-Clawson Company
Foster Wheeler Corp.
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Fibre Making Processes, Inc.
Hardinge Co., Inc.
Merrick Scale Mfg. Co.
Leeds & Northrup
Wallace & Tiernan

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Bloomfield Woolen Co.
Bulkley, Dunton Pulp Co., Inc.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc.
Morey Paper Mill Supply Co.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.

FELT CONDITIONERS
Steamaire Company

FELT GUIDES
Moore & White Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
Aluminum Flake Co.
American Colloid Co.
Amer. Cyanamid & Chem. Corp.
Amer. Resinous Chemicals Corp.
Johns-Manville Sales Corp.
W. H. Loomis Talc Corp.
Vanderbilt Co., R. T.
Witco Chemical Co.

FILTERS
Cochrane Corp.
Hardinge Co., Inc.
Moore & White Co.
J. O. Ross Engrg. Corp.
Witco Chemical Co.
Worthington Pump & Machy. Corp.

FLOORING, GRATING & TREADS
Hendrick Mfg. Co.
Klemp Co., W. F.
Norton Co.
Raybestos-Manhattan Inc.
Manhattan Rubber Division
United States Rubber Co.

FORMING MACHINES
Downingtown Mfg. Co.
Noble & Wood Machine Co.
Oliver United Filters
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.

FRICTION MATERIALS
Johns-Manville Sales Corp.

FREENESS TESTERS
Testing Machines, Inc.
Williams Apparatus Co.

GEARS
Black-Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

GRINDERS
Carthage Machine Co.
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Montague Machine Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Wks.

GRINDING WHEELS
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
Norton Company
United States Rubber Co.

HEAT EXCHANGERS
Foster Wheeler Corp.

HEAT RECOVERY SYSTEMS
Foster Wheeler Corp.

HEATING, VENTILATING AND AIR CONDITIONING
The Appleton Machine Co.
Armstrong Machine Works
Cochrane Corp.
E. D. Jones & Sons Co.
General Electric Co.
Grinnell Company
Leeds & Northrup
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Ross Engineering Corp., J. O.
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Worthington Pump & Machy. Corp.

HOISTS
Appleton Machine Co.
Dilts Machine Works
Rodney Hunt Machine Co.
Ingersoll-Rand Co.
E. D. Jones & Sons Co.
Reading Chain & Block Corp.

HOSE (Air, Water, Suction, etc.)
The Cincinnati Rubber Mfg. Co.
Raybestos-Manhattan Inc.
Manhattan Rubber Division
United States Rubber Co.

WHERE TO BUY

HUMIDITY CONTROL
Spray Engrg. Company
Steamaire Company

HYDRAPULPERS
Ross Paper Machy. Co.

INSTRUMENTS, TESTING AND MEASURING
Bauer Brothers Co.
N. P. Bowsher
The Bristol Company
Cochrane Corp.
The Foxboro Company
General Electric Company
W. & L. B. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taber Instrument Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Wallace & Tiernan Instrument Co.
Williams Apparatus Co.

INSULATION
Johns-Manville Sales Corp.

JOINTS
Perfecting Service Company

JORDAN FILLINGS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
Valley Iron Works Co.

KNOTTERS
Fibre Making Processes, Inc.

LABORATORY EQUIPMENT
Appleton Machine Co.
Bauer Brothers Co.
The Biggs Boiler Works Co.
W. H. & L. D. Betz
Dilts Machine Works
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Taber Instrument Co.
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works
Williams Apparatus Co.

LAY BOYS
Hamblet Machine Co.
Moore & White Co.
Shartle Brothers

LINTER COTTON
The Railway Supply & Mfg. Co.

LUBRICANTS
Gulf Oil Corporation
Gulf Refining Co.
Sinclair Refining Co.
Socony-Vacuum Oil Co., Inc.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

LUBRICATORS
Hills-McCanna Co.

MATERIAL HANDLING
Automatic Transportation Co.
Brooks Equipt. & Mfg. Co.
Northwest Engrg. Co.
Reading Chain & Block Company

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Montague Machine Co.
Lobdell Car Wheel Co.
Testing Machines, Inc.
Walker-Goulard-Plehn Co.

MOISTENING EQUIPMENT
The Spray Engineering Co.
Steamaire Company

MOISTURE CONTENT CONTROL
Spray Engrg. Company
Steamaire Company
Williams Apparatus Co.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
Continental Electric Co.
De Laval Steam Turbine Co.
General Electric Co.
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.
Westinghouse Electric Corporation

NOZZLES
Spray Engrg. Company
Steamaire Company

PACKING BOXES
Johnson Corporation
Shartle Brothers Machine Co.

PACKING
Johns-Manville Sales Corp.
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
United States Rubber Co.

PAPER MACHINES
Bagley & Sewall Co.
Black-Clawson Company
Downingtown Mfg. Co.
Thomas W. Hall Co.
Moore & White Co.
Pusey & Jones
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINE SLICES
Black-Clawson Company
E. D. Jones & Sons Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Wks.
Valley Iron Works Co.

PAPER MILL BUILDERS
Merritt-Chapman & Scott Corp.
The Rust Engrg. Co.

PAPER TUBE MACHINERY
Theo. Adams
Dietz Machine Works
Thomas W. Hall Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.
South Wabash Engrg. Co.

PASTING MACHINES
Black-Clawson Company
Davis, Frank H., Co.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.
Waldron Corp., John

PENSTOCKS, WELDED STEEL
The Biggs Boiler Works Co.

PERFORATED METAL
Allis-Chalmers Mfg. Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.

PIPE
Black-Clawson Company
Crane Company
Deublin Company
Grinnell Company
Johns-Manville Sales Corp.
Shartle Brothers Machine Co.
Stowe-Woodward, Inc.
Taylor Forge & Pipe Works
Walworth Company

PLATERS
Perkins & Son, Inc., B. F.

PLATES
Black-Clawson Company
Hendrick Mfg. Co.
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Timken Roller Bearing Co.

PLATE WORK (Steel & Alloy)
The Biggs Boiler Works Co.

PLUGS
Black-Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.

PRESSURE VESSELS, STEEL AND ALLOY
The Biggs Boiler Works Co.
Foster Wheeler Corp.

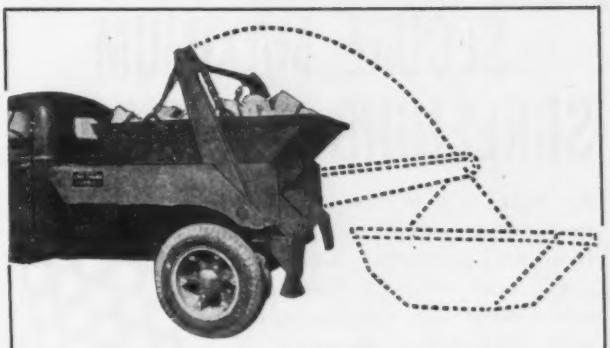
PRESSES
Black-Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Fibre Making Processes, Inc.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Rotogravure Engineering Co.
Shartle Brothers
South Wabash Engrg. Co.
Valley Iron Works Co.
Waldron Corp., John
Weber, Herman G.
Williams Apparatus Co.

PULPERS
Bauer Brothers Co.

PULPS
Andersen Co., J.
Bulkley, Dunton Pulp Co., Inc.
Gottesman & Co., Inc.
Elof Hansson, Inc.
Lyddon & Co. (America) Inc.
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.

PULPSTONES
Norton Company

PUMPS
Allis-Chalmers Mfg. Co.
Black-Clawson Company
Buffalo Pumps, Inc.



Only 15 Seconds

To LOAD or UNLOAD!

What's your materials handling problem? Chips? Pulp? Acid? Chemicals? Waste paper? With a Brooks Load Lugger hoisting unit installed on one of your trucks you can use any number of detachable buckets in and around your plant—at receiving and storage buildings, on loading platforms, at different points of process where the amounts handled do not warrant pipe line or conveyor methods. Low level buckets are easily loaded, can be hoisted or dumped in 15 seconds. Available in all sizes and types—enclosed water-tight, standard tilt-type and open-end (for handling bleaching powder drums, acid carboys, etc.). Write for catalog today.

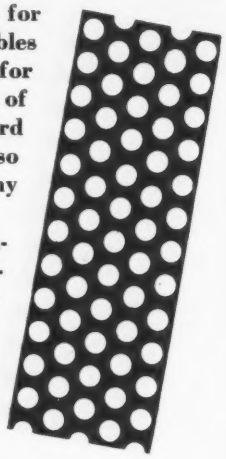
Brooks LOAD LUGGER
Distributors in all Principal Cities
BROOKS EQUIPMENT & MFG. CO.
2001 Davenport Rd. Knoxville 8, Tenn.

CLINTON
STARCHES
Special Grades for Beater, Calender and Tub Sizing
•
Offering a Personalized Service to Industry Since 1906
CLINTON INDUSTRIES, INC.
Clinton, Iowa
QUALITY • UNIFORMITY • SERVICE

SECURE MAXIMUM SCREENING EFFICIENCY

An unrivaled tool equipment for perforating metal plate enables Hendrick to furnish screens, for paper mill use, with openings of any desired size ranging upward from .023 inches. Hendrick also makes milled slot screens in any width.

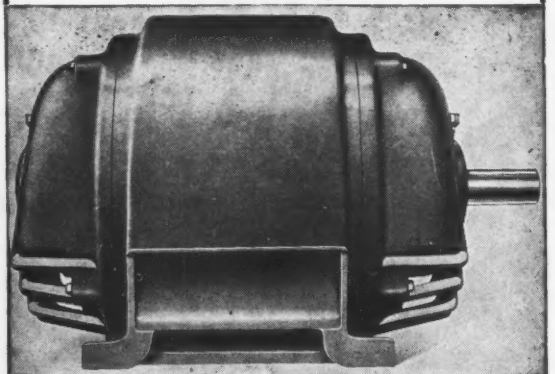
Screens are fabricated to individual specifications, in any required gauge, from stainless steel, bronze, copper, Monel, and other commercially rolled metals. Write for full information.



Perforated Metals
Perforated Metal Screens
Architectural Grilles
Mitco Open Steel Flooring,
"Shur-Site" Treads and
Armorgrids.

HENDRICK
Manufacturing Company
50 DUNDAFF STREET, CARBONDALE, PA.
Sales Offices in Principal Cities

Continental
SQUIRREL CAGE MOTORS
1 to 600 Hp.



A Continental 150 Hp. 1800 R.p.m. Drip-Proof Squirrel Cage Motor

CONTINENTAL ELECTRIC CO., Inc.
Plants—Newark 5, N. J., Rockford, Ill.

Continental
ELECTRIC MOTORS

WHERE TO BUY

Dorr Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Hardinge Co., Inc.
Hills-McCanna Co.
Ingersoll-Rand Co.
Johnson Corp.
Moore & White Co.
Morris Machine Works
Nash Engineering Co.
Noble & Wood Machine Co.
Paper Converting Mch. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Steamaire Company
Warren Steam Pump Company
Worthington Pump & Mchy. Corp.

RAG CUTTERS
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

RECOVERY SYSTEMS
Bulkley, Dunton Pulp Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones
Ross Engineering Corp., J. O.
Valley Iron Works Co.

REELS
Black-Clawson Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Hudson Sharp Machine Company
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
The Hermann Manufacturing Co.
E. D. Jones & Sons Co.
Murray, D. J., Mfg. Co.
Noble & Wood Machine Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout, Waldron & Co.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
The Bristol Company
The Brown Instrument Co.
Cochrane Corp.
The Foxboro Company
Jones, E. D., & Sons Co.
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Shartle Brothers
Stickle Steam Specialties Co.
Taylor Instrument Companies
Wallace & Tiernan
Westinghouse Electric Corporation

RESINS
Amer. Cyanamid & Chemical Corp.
Amer. Resinous Chemicals Corp.
Monsanto Chemical Co.
The Resinous Prod. & Chem. Co.

ROLLS
Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Improved Paper Machy. Corp.
Lobdell Co.
Montague Machine Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Perkins, B. F., & Sons Co.
Philbrick Engrg. & Machine Co.
Pusey & Jones Corp.
Raybestos-Manhattan Inc.
Manhattan Rubber Division
Roehlen Engraving Works
J. J. Ross Company
Ross Paper Machy. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Sinclair Co.
Smith & Winchester Mfg. Co.
Stearns Magnetic Mfg. Co.
Stowe-Woodward, Inc.
United States Rubber Co.
Valley Iron Works Co.
Waldron Corp., John

ROLL COVERS
The Cincinnati Rubber Mfg. Co.
Stowe-Woodward, Inc.

ROLL STANDS
Cameron Machine Co.
The Kohler System Company
Moore & White Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
South Wabash Engrg. Co.

ROOFING MATERIALS
Johns-Manville Sales Corp.

ROTARY BOILERS
Biggs Boiler Works

SATURATING MACHINES
Black-Clawson Company
Moore & White Co.
Noble & Wood Machine Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

SAVEALLS
Bulkley, Dunton Pulp Co., Inc.

SCALES
Merrick Scale Mfg. Co.

SCREEN PLATES
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Testing Machines, Inc.
Union Machine Co.
Union Screen Plate Co.

SCREENS
Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Company
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Harrington & King Perforating Co.
Hendrick Manufacturing Co.
E. D. Jones & Sons Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.

SHEET MACHINES
Thomas W. Hall Co.
The Hermann Manufacturing Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
Valley Iron Works Co.
Williams Apparatus Co.

SHOWER PIPES
Bird Machine Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
Improved Paper Machy. Corp.
Moore & White Co.
Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

SHREDDERS
Bauer Brothers Co.
Carthage Machine Co.

SIZING
Amer. Cyanamid & Chemical Co.
Amer. Resinous Chemicals Corp.
Black-Clawson Company
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Flintkote Company
Monsanto Chemical Co.
National Oil Products Co.
Paper Makers Chemical Department, Hercules Powder Co.
Philadelphia Quartz Co.
Pioneer Salt Company
Socony-Vacuum Co.
Stein, Hall & Co., Inc.

SLIME CONTROL
Falls Chemical Products Co.
Magnus Chemical Co.
Mallinckrodt Chemical Wks.

SLITTERS
Theo. Adams
Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Wks.
Smith & Winchester Mfg. Co.
South Wabash Engrg. Co.
Valley Iron Works Co.
Waldron Corp., John

SMOKE STACKS
The Biggs Boiler Works Co.

SOLENOID VALVES
Steamaire Company

WHERE TO BUY

SPRAYING EQUIPMENT
The Spray Engineering Co.
Steamaire Company
STAINLESS STEEL
Anti-Corrosive Metal Products Co., Inc.
STARCH
Amer. Cyanamid & Chemical Corp.
Clinton Industries, Inc.
National Starch Products, Inc.
Stein, Hall & Co., Inc.
STATIC ELIMINATORS
Steamaire Company
STEAM SPECIALTIES
Babcock & Wilcox Co.
Cochrane Corp.
Johnson Corp.
Perfecting Service Company
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.
STEEL TANKS
The Biggs Boiler Wks. Co.
STRAPPING & STRAPPING MACHINES
Acme Steel Company
The Stanley Works
STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.
SUCTION BOXES
Black-Clawson Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Westinghouse Electric Corp.
SULPHUR
Amer. Cyanamid & Chemical Corp.
Stauffer Chemical Company
Texas Gulf Sulphur Co.
Witco Chemical Company
SULPHUR BURNERS
Valley Iron Works Co.
SULPHUR DIOXIDE
Ansul Chemical Company
SUPERCALENDERS
B. F. Perkins & Son, Inc.
TALC
Amer. Cyanamid & Chemical Corp.
W. H. Loomis Talc Corp.
TANKS
Cochrane Corp.
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
The Noble & Wood Machine Co.
Raybestos-Manhattan Inc.
Manhattan Rubber Division
Rodney Hunt
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Stowe-Woodward, Inc.
United States Rubber Co.
Waldron Corp., John
B. F. Perkins & Son, Inc.
Testing Machines, Inc.
THICKENERS, DECKERS AND SAVEALLS
Bird Machine Company
Bulkley, Dunton Pulp Co., Inc.
Carthage Machine Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Hardinge Co., Inc.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Valley Iron Works Co.
TITANIUM
E. I. du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.
Witco Chemical Company
TOOLS
Acme Steel Company
Ingersoll-Rand Co.
The Stanley Works
Walworth Company
TRUCKS
Automatic Transportation Co.
TRAPS
Armstrong Machine Works
Cochrane Corp.
Crane Co.
Grinnell Company.
Johnson Corporation
Shartle Bros. Mch. Co.
TUBS
Rodney Hunt Machine Co.
Noble & Wood Machine Co.
Shartle Brothers
Valley Iron Works Co.
TURBINES
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.
Westinghouse Electric Corp.
Worthington Pump & Machy. Corp.
TURPENTINE RECOVERY
Foster Wheeler Corp.
USED EQUIPMENT
Frank H. Davis Company
Gibbs-Brower Co.
Thomas W. Hall Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
Ross Paper Machinery Co.
Shartle Brothers Machine Co.
VALVES
The Bristol Company
Cochrane Corp.
Crane Company
Dilts Machine Works
Fibre Making Processes, Inc.
The Foxboro Company
E. D. Jones & Sons Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Permutit Company
William Powell Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies
Valley Iron Works Co.
Walworth Company
VALVES, LUBRICATED PLUG
American Car & Foundry Co.
VATS & VAT PARTS
Union Machine Co.
Union Screen Plate Co.
WASHERS
Bird Machine Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Wks.
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.
WATER CONDITIONING
Cochrane Corp.
The Permutit Company
WATER DISPERSIONS
American Anode, Inc.
WAXING MACHINERY
Black-Clawson Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.
WELDING EQUIPMENT
Allis-Chalmers Mfg. Co.
General Electric Company
Walworth Company
Westinghouse Electric Corp.
WET MACHINES
Black-Clawson Co.
Carthage Machine Co.
Downingtown Mfg. Co.
Moore & White Co.
Montague Machine Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Wks.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
WINDERS AND REWINDERS
Black-Clawson Company
Cameron Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Langston Co., Samuel M.
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Potdevin Machine Co.
Pusey & Jones Corp.
Rotogravure Engrg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Wks.
Smith & Winchester Mfg. Co.
South Wabash Engrg. Co.
Waldron Corp., John
WIRES
Appleton Wire Works
Black-Clawson Company
Bulkley, Dunton Pulp Co., Inc.
Cheney Bigelow Wire Works
Hayden Wire Works
International Wire Works
Lindsay Wire Weaving Co.
Shartle Brothers Machine Co.
WOOD PEELERS
Nekoosa Fdy. & Mch. Wks., Inc.
WOOD SPLITTERS
Carthage Machine Co.

FLOKOTE
COATING STARCH

SMOOTHS OUT LIKE WATER

Machine coaters are offered the rapid production, low cost advantages of a starch binder capable of producing coating mixes of 40-45% solids for brush and up to 65% solids for machine application. FLOKOTE mixes, with their consistently low yield point, flow like liquids, rather than soft solids in the machine and over the paper—and smooth out brush marks. National also produces sizings for:

BEATER • TUB • CALENDER

Offices: 270 Madison Avenue, New York 16; Boston, Philadelphia, Chicago, Indianapolis, New Orleans, San Francisco and other principal cities. In Canada: Meredith, Simmons & Co., Ltd., Toronto. In Holland: Nationale Zetmeelindustrie, N. V., Veendam

National
STARCH PRODUCTS

STARCHES—AND SPECIALTIES WITH EASILY DEMONSTRATED SUPERIORITY

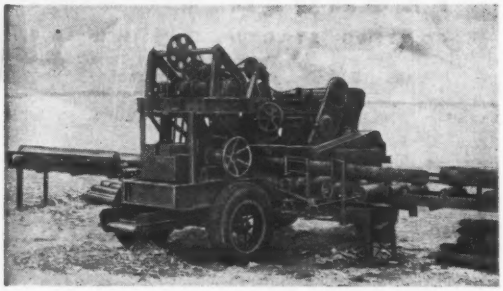
PRICE & PIERCE, Ltd.

WOOD PULP & PAPER AGENTS

for domestic and export

60 EAST 42nd STREET
New York 17, N.Y.

NEKOOSA PORTABLE WOOD PEELER



ADAPTABLE TO A VARIETY OF OPERATING CONDITIONS

Savings

If wood is peeled in the woods freight on bark is eliminated, less weight per cord of wood is shipped thus reducing freight. Shrinkage per cord is reduced. Wood can be peeled mechanically at less cost than the differential between peeled and rough wood.

Large Capacity
Low Cost Operation
No Wood Loss

manufactured by

Nekoosa Foundry & Machine Works Inc.

Nekoosa, Wis. U. S. A.

ALPHABETICAL INDEX TO ADVERTISERS IN THIS ISSUE

A

Allis-Chalmers Mfg. Co. 3
Appleton Wire Works, Inc. 53
Appleton Woolen Mills 53
Asten Hill Mfg. Co. ...Front Cover

B

Bedford Development Corp. 63
Black-Clawson Co. 55
Blaw-Knox Company 49
Brooks Equipt. & Mfg. Co. 65

C

Calgon Inc. 23
Cambridge Instrument Co. 48
Cameron Machine Co. 61
Cheney Bigelow Wire Works .. 30
Clark, Frederic C. 53
Classified Advertising 54
Clinton Industries, Inc. 65
Continental Electric Co. 66

D

Davis, Frank H., Co. 58
DeLaval Steam Turbine Co. ... 60
Dilts Machine Co. 55
Dow Chemical Co. 34
Downingtown Mfg. Co. 2
Draper Brothers Co. 69

E

English China Clays Sales Corp. 61

F

Ferguson, Hardy S. 53
Flintkote Company 15

G

General Electric Co. .....8 & 9
Gibbs-Brower Co., Inc. 58

H

Hall, Thomas W., Company .. 60
Hansson Inc., Elof 6
Hardy, George S. 53
Harrington & King Perf. Co. .. 61
Hendrick Mfg. Co. 66
Heppenstall Company 13
Hudson Sharp Mch. Co. 62

K

Kalamazoo Tank & Silo Co. 51
Kinsley Chemical Company 53

L

LaBoiteaux Co., The 25
Langston Co., Samuel M. 27
Lyddon & Company 33

M

Main, Inc., Chas. T. 53
Mayer Machine Co. 53
McPherson Co., The 61
Mead Corporation 51
Merritt-Chapman & Scott Corp. 53
Michigan Steel Casting Co. 53
Moore & White Company 60
Murray & Tergurtha 7

N

Nat. Starch Products 67
Nat. Technical Labs. 17
Nekoosa Fdy. & Mch. Co. 68
Niagara Alkali Co. 19

O

O'Donoghue, Roderick 53

P

Paper Converting Mch. Co. 64
Paper & Ind. Appliances 29
Parsons & Whittemore 33
Pennotex Oil Corp. 53
Potdevin Machine Co. 62
Price & Pierce, Ltd. 67

R

Raymond Service, Chas. P. ... 54
Record Fdy. & Mch. Co. 61
Ross, J. J., Company 56
Ross Paper Machinery Co. 57

S

Shartle Brothers Machine Co. . 55
Smith & Winchester Mfg. Co. .. 51
Socony Vacuum Oil Co. Back Cover
Spray Engrg. Company 5
Sun Oil Company 10

T

Tidewater Assoc. Oil Co. 53

U

U. S. Rubber Co. 31

W

Wallerstein Co., Inc. 53
Waterbury Felt Company 61
West Va. Pulp & Paper Co. ... 64
Witco Chemical Co. 49
Wyandotte Chemicals Corp. 4

Draper's

ATLAS OF AMERICAN PAPERMAKING

No. 22 PUBLISHED BY DRAPER BROTHERS COMPANY • CANTON, MASSACHUSETTS

Map copyright by L. D. Post, Inc., New York, N. Y. American Map Co., New York, N. Y.

HIGH LIGHTS:

Illinois rating ninth in production of paper and paperboard, is notable for the manufacture of utility or mechanical papers. Being a prairie state, it lacks great stands of forests suitable for pulp wood and depends largely upon native-grown straw and waste papers.

Of its thirty-eight paper machines, thirty-three are cylinders, devoted to a wide variety of paperboard manufacture. Strawboard and straw paper for corrugating are characteristic products of the southerly mills of the state, but elsewhere asbestos, stereotype mat, insulation and leatherboard are made. Felting, roofing and saturating papers are also produced in large quantity.

One company does produce excellent quality of Fourdrinier paper for offset printing, index bristol and papeteries, for which a ready sale is found in the great printing center, Chicago, where the payrolls for the graphic arts, surprisingly enough, exceed those of the famous packing industry of that great metropolis.

Papermaking was featured both at the Columbian Exposition at Chicago in 1893, and at A Century of Progress in 1933 by actual demonstrations of the manufacture of paper. As a distributing center for the paper industry, this city is unsurpassed.

Draper Felts for Efficiency

DRAPER BROTHERS COMPANY

Woolen Manufacturers Since 1856

Canton, Massachusetts

RALPH E. BRIGGS Sales Manager

BRADFORD WEST, PITTSFIELD, MASS. • WILLIAM N. CONNOR Jr., CANTON, MASS. • L. H. BREYFOGLE, KALAMAZOO, MICH. • W. L. CAMPBELL, SAVANNAH, GA.

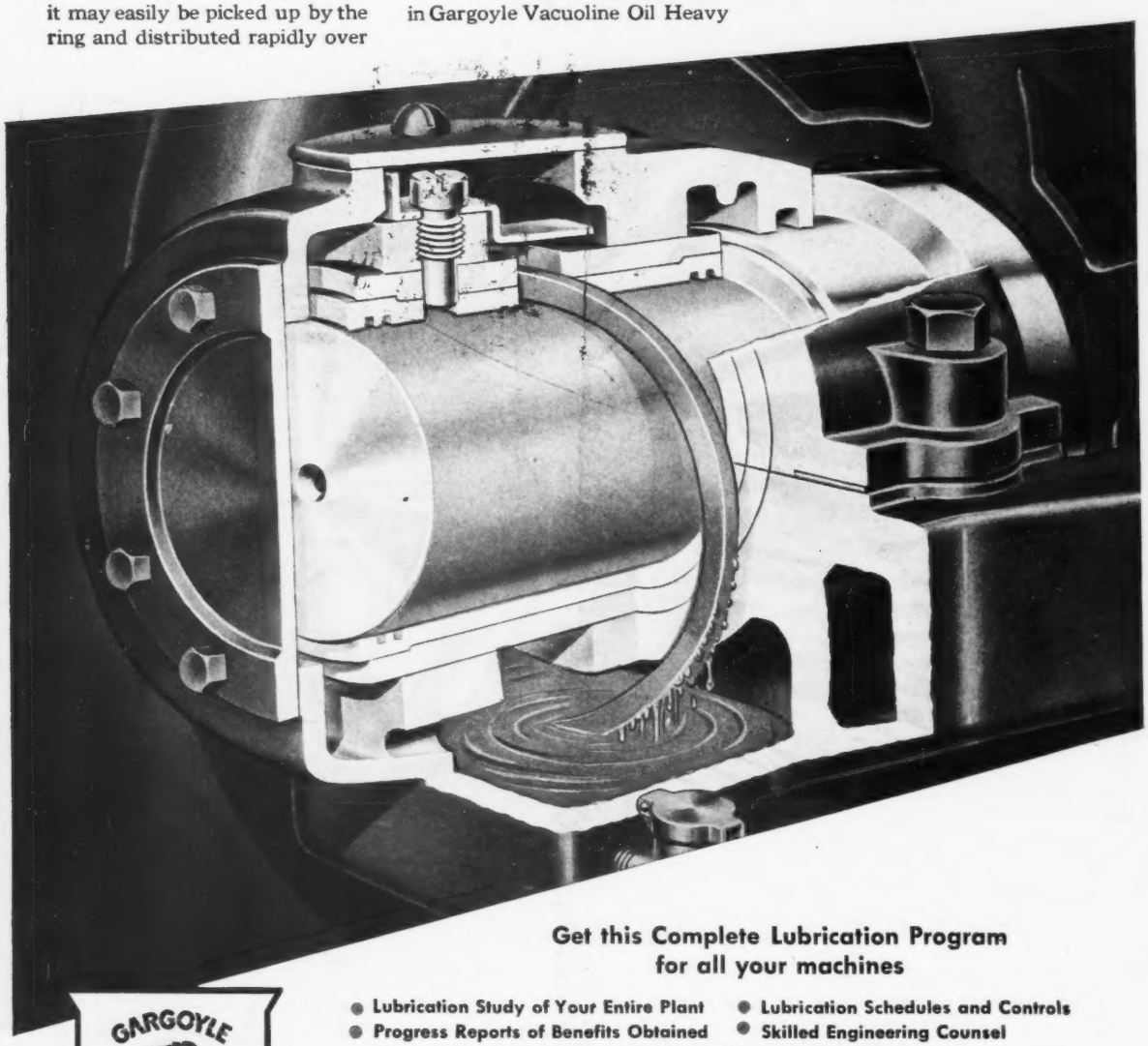
In electric motors—
it's *Staying Power* that counts!

AN electric motor demands lubrication with the same "staying power" that's built into the motor itself.

And that's not as simple as it seems! Take this ring-oiled bearing, for instance. The oil you see must be of correct fluidity, so that it may easily be picked up by the ring and distributed rapidly over the bearing. But—most important—*it must stay that way!* Even though it's used over and over again, it must not thicken so that ring action is retarded, or form deposits that may stop the ring and starve the bearing.

You'll find this "staying power" in Gargoyle Vacuoline Oil Heavy Medium. It has unusual chemical stability—resists change and keeps its rich lubricating qualities through long periods of use.

For grease-lubricated electric motor bearings, the same reliable performance is offered by Gargoyle Greases BRB.



Get this Complete Lubrication Program for all your machines

- Lubrication Study of Your Entire Plant
- Lubrication Schedules and Controls
- Progress Reports of Benefits Obtained
- Skilled Engineering Counsel
- Recommendations to Improve Lubrication

GARGOYLE Lubricants

Socony-Vacuum Oil Co., Inc.

and Affiliates: Magnolia Petroleum Co., General Petroleum Corp.